TCS Ninja *programming* MCQ's with answers

TCS Ninja *coding* questions and answers

TCS Ninja *Aptitude* & *English* questions – Answers with Explanations

Source: FACE Prep

TCS Ninja Mock test questions – Coding section

Consider the below series:

1, 2, 1, 3, 2, 5, 3, 7, 5, 11, 8, 13, 13, 17, …

This series is a mixture of 2 series – all the odd terms in this series form a Fibonacci series and all the even terms are the prime numbers in ascending order.

Write a program to find the Nth term in this series.

The value N is a Positive integer that should be read from STDIN. The Nth term that is calculated by the program should be written to STDOUT. Other than the value of Nth term, no other characters/strings or message should be written to STDOUT.

For example, when N = 14, the 14th term in the series is 17. So only the value 17 should be printed to STDOUT.

Program:

```
#include<stdio.h>
#define MAX 1000
void fibonacci(int n)
{
int i, t1 = 0, t2 = 1, nextTerm;
for (i = 1; i<=n; i++)
{
nextTerm = t1 + t2;
t1 = t2;
t2 = nextTerm;
}
```

_____

```
    printf(―%d‖, t1);
    }

    void prime(int n)
    {
    int i, j, flag, count =0;
```

```
for (i=2; i<=MAX; i++)
{
flag = 0;
for (j=2; j<i; j++)
{
if(i%j == 0)
{
flag = 1;
break;
}
}
if (flag == 0)
count++;
if(count == n)
{
printf(-%d‖, i);
break;
}
}
}
int main( )
{
int n;
scanf(-%d‖, &n);
if(n%2 == 1)
fibonacci (n/2 + 1);
else
prime(n/2);
return 0;
}
```

TCS Ninja Coding question 1:

Factorial program in c using command line arguments.

Explanation: Factorial of a non-negative integer n, denoted by n!, is the product of all positive integers less than or equal to n. For example, The value of 5! is 5*4*3*2*1 = 120

Solution:

```
#include
int main(int a, char *b[]) //command line arguments
{
int x,y,f=1;
x=atoi(b[1]); //atoi function is to convert a character to integer
for(i=1;i<=x;i++)
{
f=f*i;
}
printf(-%d‖,f);
return 0;
}
```

TCS Ninja Coding question 2:

Write a c program, to find the area of a circle when the diameter is given, using command line arguments. The input diameter is an integer and the output area should be a floating point variable with 2 point precision.

Solution:

```
#include
#define PI 3.14
int main(int a, char *b[]) //command line arguments
{
int d; float area =0;
d= atoi(argv[1]);
area =(float) PI*(d/2)*(d/2);
printf(–%0.2f‖, area);    //%0.2f is to print the answer with 2 values after decimal point.
return 0;
}
```

TCS Ninja Coding question 3:

Write a c program, to check whether the given year is a leap year or not using command line arguments. A leap year is a calendar year containing one additional day (Feb 29th) added to keep the calendar year synchronized with the astronomical year.

Solution:

```
#include
int main(int a, char*b[])
{
int year; year=atoi(b[1]);
if(year%100==0)
{
if(year%400==0)
{
printf(–LEAP YEAR‖);
}
else{
printf(–NOT LEAP YEAR‖); } }
else if(year%4==0)
{
printf(–LEAP YEAR‖);
}
else{
printf(–NOT LEAP YEAR‖);
}
return 0; }
```

TCS Ninja Coding question 4:

Write a c program, to find the GCD of the given 2 numbers, using command line arguments. The input is 2 integer and the output GCD also should be an integer value.

Solution:

```
#include
int main(int x, char *y[])
{
inta,b,small,i;
a=atoi(y[1]);
b=atoi(y[2]);
small=a>b?b:a;
for(i=small;i>=1;i–)
{
if((a%i==0)&&(b%i==0))
{
printf(–%d‖,i);
break;
} }
return 0;
}
```

TCS Ninja Coding question 5:

C Program to check whether a given number is a prime number or not. The given number N, a positive integer, will be passed to the program using the first command line parameter. If it is a prime number the output should be the square root of the number up to 2 decimal point precision, If it is not a prime number then print 0.00 to stdout.

Solution:

```
#include
#include
#include int main(int a, char *b[])
{
int number,i,flag = 1;
number = atoi(b[1]);
for(i=2; i<number; i++)
{
if(number%i == 0)
{
flag = 0;
break;
}
}
if(flag == 1)
printf(–%.2f‖,sqrt(number));
else
printf(–0.00‖);
return 0;
}
```

TCS Ninja Coding question 6:

C Program to check whether a given number is a strong number or not. The given number N, a positive integer, will be passed to the program using the first command line parameter. If it is a strong number, the output should be ―YES‖, If it is not a prime number then output should be ―NO‖ to stdout. Other than YES or NO, no other extra information should be printed to stdout.

Solution:

```
#include
#include
int main(int a, char *b[])
{
int number, i, temp, sum = 0, factorial = 1;
number = atoi(b[1]);
temp = number;
while(number != 0)
{
int rem = number%10;
for(i=2; i<=rem; i++)
{
factorial = factorial * i;
}
sum = sum + factorial;
number = number/10;
factorial = 1;
}
if(temp == sum)
printf(―YES‖);
else
printf(―NO‖);
return 0;
}
```

TCS Ninja Coding question 7:

Write a C program which will convert a given decimal integer number N to its binary equivalent. The given number N, a positive integer, will be passed to the program using the first command line parameter. Print the equivalent binary number to stdout. Other than the binary number, no other extra information should be printed to stdout Example: Given input ―19‖, here N=19, expected output 10011

Solution:

```
#include
#include
int main(int a, char *argv[])
{
int number, count, i;
int b[32];
number = atoi(argv[1]);
count = 0;
while(number != 0)
{
```

```
b[count]=number%2;
number = number/2;
count++;
}
for(i=(count-1); i>=0; i–)
printf(―%d‖, b[i]);
return 0;
}
```

TCS Ninja Coding question 8:

Write a c program that will find the sum of all prime numbers in a given range. The range will be specified as command line parameters. The first command line parameter, N1 which is a positive integer, will contain the lower bound of the range. The second command line parameter N2, which is also a positive integer will contain the upper bound of the range. The program should consider all the prime numbers within the range, excluding the upper bound and lower bound. Print the output in integer format to stdout. Other than the integer number, no other extra information should be printed to stdout. Example Given inputs ―7‖ and ―24‖ here N1= 7 and N2=24, expected output as 83.

Solution:

```
#include
int main(int argc, char *argv[])
{
int N1, N2, j, i, count, sum = 0;
N1 =atoi(argv[1]);
N2 =atoi(argv[2]);
for(i=N1+1; i<N2; ++i)
{
count = 0;
for(j=2; j<=(i/2); j++)
{
if(i%j==0)
{
count++;
break;
}
}
if(count==0)
sum = sum + i;
}
printf(―%d‖,sum);
return 0;
}
```

TCS Ninja Coding question 9:

Write a C program to check whether the given number is a perfect square or not using command line arguments.

Solution:

```c
#include
#include
int main(int a, char *b[])
{
int n, i;
n= atoi(b[1]);
for(i = 0; i <= n; i++)
{
if(n == i * i)
{
printf(―YES‖);
return 0;
}
}
printf(―NO‖);
return 0;
}
```

TCS Ninja Coding question 10:

Write a C program to check whether the given number is Palindrome or not using command line arguments.

Solution:

```c
#include
#include
int main(int a,int *b[])
{
int number, rem, sum = 0;
number = atoi(b[1]);
int copy = number;
while(number != 0)
{
rem =number%10;
sum = sum * 10 + rem;
number = number/10;
}
if(copy == sum)
printf(―Palindrome‖);
else
printf(―Not Palindrome‖);
return 0;
}
```

TCS Ninja Coding question 11:

Write a C program to convert the vowels to an uppercase in a given string using command line arguments.

Example: if the input is tata, then the expected output is tAtA.

Solution:

```c
#include
int main(int argc, char *argv[])
{
char *str = argv[1];
int i;
for(i =0; str[i] !='\0'; i++)
{
if(str[i] == _a' || str[i] == _e' || str[i] == _i' || str[i] == _o' || str[i] == _u')
{
str[i] = str[i] – 32;
}
}
printf(–%s‖, str);
return 0;
}
```

TCS Ninja Coding question 12:

Write a C program to find the hypotenuse of a triangle using command line arguments.

Solution:

```c
#include int main(int a, char*b[])
{
float hyp;
int opp=atoi(b[1]);
int adj=atoi(b[2]);
hyp=sqrt((opp*opp)+(adj*adj));
printf(–%0.2f‖,hyp);
return 0;
}
```

TCS Ninja Coding question 13:

Write a C program to find whether the given number is an Armstrong number or not using command line arguments.

An Armstrong number of three digits is an integer such that the sum of the cubes of its digits is equal to the number itself. For example, 371 is an Armstrong number since 3**3 + 7**3 + 1**3 = 371.

Solution:

```c
#include
#include
#include int main(int a, char*b[])
{
int n;
n= atoi(b[1]);
int sum=0;
```

```
int temp=n;
int cnt=0;
while(n!=0)
{
n=n/10;
cnt++;
}
n=temp;
while(n!=0)
{
int rem=n%10;
sum=sum+pow(rem,cnt);
n=n/10;
}
if(temp==sum)
{
printf(–yes‖);
}
else
{
printf(–no‖);
}
return 0;
}
```

TCS Ninja Coding question 14:

Write a program to generate Fibonacci Series.

Solution:

```
#include
#include
int main(int a, char *b[])
{
int i, n, t1 = 0, t2 = 1, nextTerm;
n=atoi(b[1]);
for (i = 1; i <= n; ++i)
{
printf(–%d –, t1);
nextTerm = t1 + t2;
t1 = t2;
t2 = nextTerm;
}
return 0;
}
```

TCS Ninja Programming MCQ's

TCS Ninja mock test – Programming MCQ's (Standard)

1)

```
#include
int main(int argc, char ** argv)
{
char **items;
int j = 3, i;
items = argv;
for(i = 1; (i%4); i++)
{
int **p = &items[j];
printf(―%c‖, **p);
j–;
}
return 0;
}
```

The above code is run with three command line parameters mentioned below:

Paper Ink Pen

What will be the output of the above program?

1. PIP
2. Pen
3. Pap
4. Ink

Answer: a

2) Improper formation of which of the following data-structures can cause un-intentional looping of a program that uses it.

2. Linked list
3. Array
4. Queue
5. Stack

Answer: Linked list

3) What is the data type that occupies the least storage in ―C‖ language?

Please give the answer in the blank line:

Answer: char

4) Which of the following is true?

a. Array is a dynamic data structure whose size can be changed while stacks are static data structures whose sizes are fixed.
b. Array elements can be accessed and modified(elements can be added or removed) only at the ends of the array while any elements of the stack can be accessed or modified randomly through their indices.
c. An array can have elements of different data types.
d. Elements of a linked-list can be accessed only sequentially.

Answer: d

5) Which of the following statements is FALSE?
a. The time complexity of binary search is O(log n).
b. A linear search requires a sorted list.
c. A binary search can operate only on a sorted list.
d. The time complexity of linear search is O(n).

Answer: b

6) Eesha wrote a function fact( ) in –C‖ language to calculate factorial of a given number and saved the file as fact.c. She forgot to code the main function to call this fact function. Will she be able to compile this fact.c without the main() function?
a. Yes, she can compile provided the compiler option -nostrict-checking is enabled.
b. No, she can not compile as main function is required to compile any C program file.
c. Yes, she can compile as main( ) is not required at compile time.
d. Yes, she can compile and run as the system will supply default values to fact function.

Answer: b

7) The difference between variable declaration and variable definition is:
a. Declaration and definition are the same. There is no difference.
b. A declaration is used for variables and definitions is used for functions.
c. Declaration associates type to the variable whereas definition associates scope to the variable.
d. Declaration associates type to the variable whereas definition gives the value to the variable.

Answer: d

TCS Ninja Mock test Questions – Programming Concepts (Advanced Section)

1) The inorder and preorder traversal of a binary tree are **d b e a f c g** and **a b d e c f g**, respectively. The post- order traversal of the binary tree is:
a. d e b f g c a
b. d e f g b c a
c. e d b f g c a
d. e d b g f c a

Answer: a

2) Eesha wrote a recursive function that takes the first node in a linked list as an argument, reverses the list, returning the first Node in the result. The pseudo code for this function is given below. However, she did not get the correct result. In which line number did she make a mistake?

Please give the answer in the blank line:

```
public Node reverse(Node first)
{
if (first == null) return null;
if (first.next == null) return first;
Node second = first.next;
Node rest = reverse (second);
second.next = first;
first.next = null;
return rest.next;
}
```

Answer: return rest

3) The longest common subsequence (LCS) problem is the problem of finding the longest subsequence common to a set of sequences (often just two sequences). A subsequence is a sequence that can be derived from another sequence by deleting some or no elements without changing the order of the remaining elements. One form of implementation of LCS function is given below. The function takes as input sequences X[1…m] and Y[1…n], computes the length of the Longest common subsequence between X[1..i] and Y[1..j] for all $1 \leq i \leq m$ and $1 \leq j \leq n$, and stores it in C[i,j]. C[m,n] will contain the length of the LCS of X and Y.

```
function LCSLength(X[1..m], Y[1..n])
C = array(0..m, 0..n)
for i:= 0..m
C[i,0] =0
for j := 0..n
C[0,j] = 0d
for i := 1..m
for j := 1..n
if X[i] = Y[j]
C[i,j] := C[i-1, j-1] + 1
else
C[i,j] := max(C[i, j-1], C[i-1, j])
return C[m, n]
```

Eesha used the above algorithm to calculate the LCS length between –kitten‖ and –string‖. What was the result she got? Please give the answer in the blank line.

Answer: 2

TCS Ninja Programming MCQ's (previously asked)

1) How many times the below loop will be executed?

```
#include
int main()
{
int x, y;
for(x=5;x>=1;x–)
{
for(y=1;y<=x;y++)
printf(–%d\n‖,y);
} }
```

A. 15
B. 11
C. 10
D. 13

Solution: Option A

2) Where are the local variables stored?

A. Disk
B. Stack
C. Heap
D. Code

Solution: Option B

3) Which datatype has more precision?

A. double
B. float
C. int
D. long int

4) Find the output of the following code?

```
int main
{
float f = 0.1;
if (f = 0.1)
printf (–yes‖);
else print (–no‖);
}
```

5) What will happen if in a C program you assign a value to an array element whose subscript exceeds the size of array?

A. The element will be set to 0.
B. The compiler would report an error.
C. The program may crash if some important data gets overwritten.
D. The array size would appropriately grow.

Solution: Option C

Explanation: If the index of the array size is exceeded, the program will crash. Hence –option c‖ is the correct answer. But the modern compilers will take care of this kind of errors.

6) What does the following declaration mean?

int (*ptr)[10];

A. ptr is array of pointers to 10 integers
B. ptr is a pointer to an array of 10 integers
C. ptr is an array of 10 integers
D. ptr is an pointer to array

Solution: Option B

7) In C, if you pass an array as an argument to a function, what actually gets passed?

A. Value of elements in array
B. First element of the array
C. Base address of the array
D. Address of the last element of array

Solution: Option C
Explanation: The statement ‗C' is correct. When we pass an array as a function argument, the base address of the array will be passed.

8) What will be the output of the program ?

```
#include
int main()
{
    int a[5] = {5, 1, 15, 20, 25};
    int i, j, m;
    i = ++a[1];
    j = a[1]++;
    m = a[i++];
    printf(–%d, %d, %d‖, i, j, m);
    return 0;
}
```

A. 2, 1, 15
B. 1, 2, 5

C. 3, 2, 15
D. 2, 3, 20

Solution: Option C
Explanation:
Step 1: int a[5] = {5, 1, 15, 20, 25}; The variable arr is declared as an integer array with a size of 5 and it is initiapzed to
a[0] = 5, a[1] = 1, a[2] = 15, a[3] = 20, a[4] = 25 .
Step 2: int i, j, m; The variable i,j,m are declared as an integer type.
Step 3: i = ++a[1]; becomes i = ++1; Hence i = 2 and a[1] = 2
Step 4: j = a[1]++; becomes j = 2++; Hence j = 2 and a[1] = 3.
Step 5: m = a[i++]; becomes m = a[2]; Hence m = 15 and i is incremented by 1(i++ means 2++ so i=3)
Step 6: printf(–%d, %d, %d‖, i, j, m); It prints the value of the variables i, j, m
Hence the output of the program is 3, 2, 15

9) Is there any difference int the following declarations?

int fun(int arr[]);

int fun(int arr[2]);

A.Yes
B.No

Solution: Option B
Explanation: No, both the statements are same. It is the prototype for the function fun() that accepts one integer array as a parameter and returns an integer value.

10) Are the expressions arr and &arr same for an array of 10 integers?

A.Yes
B.No

Solution: Option B
Explanation: Both mean two different things. arr gives the address of the first int, whereas the &arr gives the address of array of ints.

11) Which of the fplowing statements should be used to obtain a remainder after dividing 3.14 by 2.1?

A.rem = 3.14 % 2.1;
B.rem = modf(3.14, 2.1);
C.rem = fmod(3.14, 2.1);
D.Remainder cannot be obtain in floating point division.

Solution: Option C
Explanation:
fmod(x,y) – Calculates x modulo y, the remainder of x/y.
This function is the same as the modulus operator. But fmod() performs floating point divisions.

12) What are the types of pnkages?

A.Internal and External
B.External, Internal and None
C.External and None
D.Internal

Solution: Option B

13) Which of the following special symbols are allowed in a variable name?

A.* (asterisk)
B.| (pipepne)
C.-(hyphen)
D._(underscore)

Solution: Option D

Explanation: Variable names in C are made up of letters (upper and lower case) and digits. The underscore character (‒_‖) is also permitted. Names must not begin with a digit.

14) Is there any difference between fplowing declarations?

1 : extern int fun();

2 : int fun();

A. Both are identical
B. No difference, except extern int fun(); is probably in another file
C. int fun(); is overrided with extern int fun();
D. None of these

Answer: Option B

Explanation: extern int fun(); declaration in C is to indicate the existence of a global function and it is defined externally to the current module or in another file.
int fun(); declaration in C is to indicate the existence of a function inside the current module or in the same file.

TCS Ninja English questions

TCS Ninja Mock test questions and solutions – English section

A greenhouse is a glass-covered structure (1)_____(uses, using, used) to grow plants. It has transparent glass that allows sunlight to pass (2)_____(out, through , inside), but does not allow the heat inside to escape. The same (3)_____(effect, affect) occurs on the earth. The (4)_____(sun's, suns, sun) radiation (5)_____(passes, passing) through the atmosphere to heat the earth's surface. When heated, the earth's surface produces infrared radiation, which has a longer wavelength than that of sunlight. This infrared radiation rises into the atmosphere where gases, such as carbon dioxide, (6)_____(prevents, prevent, prevented) the infrared radiation from escaping into space. The concentrations of these gases, (7) _____ (that, those, which) are called greenhouse gases, control how much-infrared radiation escapes.

(1) used

(2) through

(3) effect

(4) sun's

(5) passes

(6) prevent

(7) which

TCS Ninja English questions (sample questions)

1) Read each 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 could not put up in a hotel
b. because the boarding and lodging charges
c. were exorbitant.
d. No error.

Answer: a
_I could not put up at a hotel'

2)

a. A lot of travel delay is caused
b. due to the inefficiency and lack of good management
c. on behalf of the railways.
d. No error.

Answer: c
on the part of the railways

3)

a. Having received your letter
b. this morning, we are writing
c. to thank you for the same.
d. No error.

Answer: D

4)

a. Do the roses in your garden smell
b. more sweetly
c. than those in ours?
d. No error.

Answer: B
sweeter

5)

a. The students were
b. awaiting for
c. the arrival of the chief guest.
d. No error.

Answer: b

6) Identify the meaning of the idiom: To catch a tartar

a. To trap wanted criminal with great difficulty
b. To catch a dangerous person
c. To meet with disaster
d. To deal with a person who is more than one's match

Answer: b

7) To have an axe to grind

a. A private end to serve
b. To fail to arouse interest
c. To have no result
d. To work for both sides

Answer: a

8) Complete the below sentences: I felt somewhat more relaxed

a. but tense as compared to earlier
b. and tense as compared to earlier
c. as there was already no tension at all
d. and tension-free as compared to earlier

Answer: d

9) His appearance is unsmiling but

a. his heart is full of compassion for others
b. he looks very serious on most occasions
c. people are afraid of him
d. he is uncompromising on matters of task performance

Answer: a

10) DIVA: OPERA

a. producer:theatre
b. director:drama
c. conductor:bus
d. thespian:play

Answer: d

11) GRAIN:SALT

a. shard:pottery
b. shred:wood
c. blades:grass'
d. chip:glass
Answer: d

TCS Ninja Aptitude questions

TCS Ninja Mock test questions and solutions – Aptitude (Standard section)

1) A^B means A raised to the power B. If $f(x) = ax^4 - bx^2 + x + 5$ and $f(-3) = 2$, then $f(3) = ?$
a. 3
b. 8
c. -2
d. 1

Answer: b

Explanation:
$f(-3) = a(-3)^4 - b(-3)^2 + (-3) + 5 = 81a - 9b + 2 = 2$ So $81a - 9b = 0$,
$f(3) = a(3)^4 - b(3)^2 + (3) + 5 = 81a - 9b + 8$
Substituting the value of $81a - 9b = 0$ in the above we get $f(3) = 8$

2) 1/4 of the tank contains fuel. When 11 liters of the fuel is poured into the tank, the indicator rests at the 1/2 mark. Find the capacity of the tank in liters.

a. 44
b. 36
c. 6
d. 8

Answer: a

Explanation:
Let the capacity of the tank be x liters.
Given, 1/4 of x + 11 = 1/2 of x
By solving we get the x value as 44 liters.

3) You have been given a physical balance and 7 weights of 47, 46, 43, 48, 49, 42, and 77 kgs. Keeping weights on one pan and object on the other, what is the maximum you can weigh less than 178 kgs.

a. 172
b. 174
c. 175
d. 177

Answer: b

Explanation:
The maximum weight that can be weighed less than 178 kgs is 174 (48 + 49 + 77 = 174 kgs).

4) How many 6-digit even numbers can be formed from the digits 1, 2, 3, 4, 5, 6 and 7 so that the digits should not repeat and the second last digit is even?

a. 320
b. 6480
c. 2160
d. 720

Answer: d

Explanation:
To form 6-digit even number, the last digit should be an even number so 3 ways (2, 4, or 6) to fill the last digit and second last digit also should be even for which it will take 2 ways to fill.
The last two digits are filled in 6 ways(2 x 3 = 6 ways). The rest of the 4 digits can be filled in 5P4 ways i.e. 120 ways. Hence altogether to fill 6-digit even number = 120 * 6 = 720 ways.

5) Out of a group of swans, 7/2 times the square root of the total number are playing on the shore of the pond. The remaining 2 are inside the pond. Find the total number of swans.

a. 16
b. 25
c. 4
d. 9

Answer: a

Explanation:
Let the number of swans = x^2
$x^2 = 7x/2 + 2 \rightarrow x^2 = (7x + 4)/2$
$2x^2 = 7x + 4, \longrightarrow 2x^2 - 7x - 4 = 0$
The roots of x are 4, -1/2. Here -1/2 is not possible, so the x value will be 4.
The total number of swans is x^2 i.e 16.

6) In a village, every weekend, three-eight of the men and one-third of the women participate in a social activity. If the total number of participants is 54, and out of them 18 are men then the total number of men and women in the village is:

a. 180
b. 156
c. 204
d. 228

Answer: b

Explanation:
3/8th of men and 1/3rd of women participated and given that the total participants are 54.
Out of total participants 54, 18 were men and the rest will be women (54-18 = 36 women). From this, we can say that –> 3/8 * men = 18, therefore men = 48. And 1/3 of women = 36 –> women = 108.
The total number of men and women in the village is 156.

7) If M is 30% of Q, Q is 20% of P, and N is 50% of P, then M/N = ?

a. 6/5

b. 4/3
c. 3/25
d. 3/250

Answer: c

Explanation:
Q = 20% of P
M = 30% of Q —> 30% of (20% of P) —> 30/ 100 * 20/100 * P –> 6/100 * p
N = 50% of P –> 5/10 * P
M/ N = (6/100 * P) / (5/10 * P) = 6/50 = 3/25

8) There are 20 persons among whom two are sisters. Find the number of ways in which we can arrange them around a circle so that there is exactly one person between two sisters? Please note that the exact position on the circle does not matter (no seat numbers are marked on the circle), and only the relative positions of the people matter.

a. 2! * 19!
b. None of these
c. 2 * 18!
d. 18!

Answer: c

Explanation:
Fix the position of two sisters. Hence there are only 18 people left
So there are 18 ways in which a person can sit between the two sisters. Now if we swap the bothers we get another 18 ways.
So hence we have a total of = 2 * 18 combinations
Consider the group of three people(two brothers and the person between them) as a single entity.
we have another 17 people left so there are 18 entities to be arranged in total.
Arranging 18 entities around a circle can be done in (18-1)! = 17! ways
Total no of ways = 2 * 18 * 17! = 2 * 18!

9) Find the length of the longest pole that can be placed in an indoor stadium 24m long, 18m wide and 16m high.

a. 36m
b. 34m
c. 30m
d. 25m

Answer: b

Explanation:

Length of the longestt pole = diagonal of rectangular indoor stadium

$= \sqrt{(l^2+b^2+h^2)}$
$= \sqrt{(24^2+18^2+16^2)}$
$= \sqrt{(576+324+256)}$
$= \sqrt{1156}$
$= 34$ m

10) Of a set of 30 numbers, the average of first 10 numbers is equal to the average of last 20 numbers. Then the sum of the last 20 numbers is:

a. Sum of first ten numbers
b. 2 X sum of the first ten numbers
c. Cannot be determined with the given data
d. 2 x sum of last ten numbers

Answer: b

Explanation:
Average = (sum of n numbers)/(n)
(sum of first 10 numbers)/10 = (sum of last 20 numbers)/20
Hence, (sum of last 20 numbers) = 2*(sum of first 10 numbers)

11) Thomas takes 7 days to paint a house completely whereas Raj would require 9 days to paint the same house completely. How many days will it take to paint the house if both of them work together (give answers to the nearest integer)?

a. 4 days
b. 2 days
c. 5 days
d. 3 days

Answer: a

Explanation:
Work done by Thomas in a day = 1/7

Work done by Raj in a day = 1/9
Work done by both in a day = 1/7 +1/9 =16/63
Days required if they both work together = 63/16 = 3.9 = 4 days

12) The University of Vikramasila has enrolled nine Ph.D. candidates: Babu, Chitra, Dheeraj, Eesha, Farooq, Gowri, Hameed, Iqbal, Jacob.

– Farooq and Iqbal were enrolled on the same day as each other, and no one else was enrolled that day.
– Chitra and Gowri were enrolled on the same day as each other, and no one else was enrolled that day.
– On each of the other days of hiring, exactly one candidate was enrolled.
– Eesha was enrolled before Babu.
– Hameed was enrolled before Dheeraj.
– Dheeraj was enrolled after Iqbal but before Eesha.
– Gowri was enrolled after both Jacob and Babu.
– Babu was enrolled before Jacob.

Who were the last two candidates to be enrolled?

a. Eesha and Jacob
b. Babu and Chitra
c. Gowri and Chitra
d. Babu and Gowri

Answer: c

Explanation:
1. Easha < Babu
2. Hameed < Dheeraj
3. Iqbal < Dheeraj < Easha
4. Jacob/Babu < Gowri
5. Babu < Jacob
from 1 and 5, Easha was before Babu and Jacob so she cannot be in the last two. Option B ruled out
from 4 and 5, babu is before Jacob and Gowri so he cannot be in the last two. Options a, c ruled out. So option d is correct.

13) In a certain city, 60 percent of the registered voters are Party A supporters and the rest are Party B supporters. In an assembly election, if 75% of the registered Party A supporters and 20% of the registered Party B supporters are expected to vote for Candidate A, what percent of the registered voters are expected to vote for Candidate A?

a. 20
b. 60
c. 75
d. 53

Answer: d

Explanation:
let there be x number of registered voters

60% are Party A supporters = 60% of x
40% are Party B supporters = 40% of x
Out of 60%, 75% voted for party A = 75%(60% of x) = 18x/40
Out of 40% ,20% voted for party B = 20%(40% of x) = 8x/100
=18x/40+8x/100=106x/200
Percentage of registered voters expected to vote for A = 106x/200*100 = 53% of x

14) When 100 is to be successively divided by 6, 3, 4, first divide 100 by 6. Then divide the quotient 16 by 3. Then divide the quotient 5 by 4.

A number when successively divided by 5, 3, 2 gives the remainder of 0, 2 and 1 respectively in that order. What will be the remainders when the same number is divided successively by 2, 3 and 5 in that order?

a. 4, 1, 2
b. 1, 0, 4
c. 2, 1, 3
d. 4, 3, 2

Answer: b

15) Professor Nitwit obtains a hash number of a given positive integer > 3 as follows. He subtracts 2 from the number (to get the new number), and multiplies the new number by 2 to get a term. He repeats this with the new number (to get newer numbers and terms) until the number becomes 2 or 1. The hash is defined as the sum of all the terms generated in this process.

For example, with the number 5, he multiplies (5-2 =3) by 2 to get the first term 6. He multiplies (3-2=1) by 2 to get the second term 2. As the number has become 1, he stops. The hash is the sum of the two terms (6+2) or 8.

If professor Nitwit is given 3 numbers 4, 9 and 13, what is the sum of the hash numbers he obtains for the three numbers?

TCS Ninja Mock test questions and solutions – Aptitude (Advanced section)

1) How many pairs (m,n) of integers satisfy the equation $4^m = n^2 + 15$? Please do not add white space around the answer

Answer: 4

2) Of all the nonempty subsets S of { 1, 2, 3, 4, 5, 6, 7}, how many do not contain the number |S|, where |S| denotes the number of elements in S? For example, {3, 4} is one such subset, since it does not contain the number 2. Please do not add white space around the answer_____

Answer: 63

3) A chord of a circle has length 3n, where n is a positive integer. The segment cut off by the chord has height n, as shown. What is the smallest value of n for which the radius of the circle ia also a positive integer? Please do not add white space around the answer

Answer: 8

4) A function f satisfies f(0) = 0, f(2n) = f(n), and f(2n + 1) = f(n) + 1 for all positive integers n. What is the value of f(2018)? Please do not add white space around the answer

5) If n is a positive integer, let s(n) denote the integer obtained by removing the last digit of n and placing it in front. For example, s(731) = 173. What is the smallest positive integer n ending in 6 satisfying s(n) = 4n?. Please do not add white space around the answer

TCS Ninja Aptitude questions (previously asked)

1. On a 26 question test, five points were deducted for each wrong answer and eight points were added for each correct answer. If all the questions were answered, how many were correct, if the score was zero?

a. 10
b. 12
c. 11
d. 13

Ans: a

Explanation:
Let x be the number of questions correct and therefore, (26- x) will be the wrong number of questions,
8x – 5(26-x) = 0 –> 8x – 130 + 5x =0
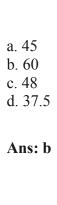13x = 130, x =10
Hence 10 questions were correct.

2. Jake can dig a well in 16 days. Paul can dig the same well in 24 days. Jake, Paul and Hari together dig the well in 8 days. Hari alone can dig the well in

a. 96 days
b. 48 days
c. 32 days
d. 24 days

Ans: b

Explanation:
Let the total work to be done is 48 meters(LCM of 16, 24 and 8). Now Jake can dig (48/16) – 3 meters, Paul can dig (24/12) – 2 meters a day. Now all of them combined dug in 8 days so per day they dug 48/8 = 6 meters. So Of these 8 meters, Hari capacity is 1 meter. So he takes 48 /1 = 48 days to complete the digging job.

3. Mark told John ─If you give me half your money I will have Rs.75‖. John said, ─if you give me one-third of your money, I will have Rs.75/- How much money did John have?

a. 45
b. 60
c. 48
d. 37.5

Ans: b

Explanation:
Let the money with Mark and John are M and J respectively.
Now
M + J/2 = 75
M/3 + J = 75
Solving we get M = 45, and J = 60.

4. The value of a scooter depreciates in such a way that its value of the end of each year is 3/4 of its value of the beginning of the same year. If the initial value of the scooter is Rs.40,000, what is the value at the end of 3 years?

a. Rs.13435
b. Rs.23125
c. Rs.19000
d. Rs.16875

Ans: d

Explanation:
Every year it depreciates 3/4 th of the previous year. So (3/ 4 x (3/4 x (3/4 of 40,000))) = 3*3*3*625 = 16875. Hence the value after 3 years is Rs. 16875

5. A man has a job, which requires him to work 8 straight days and rest on a ninth day. If he started work on Monday, find the day of the week on which he gets his 12th rest day.

a. Thursday
b. Wednesday
c. Tuesday
d. Friday

Ans: b

Explanation:
He works for 8 days and takes rest on the 9th day. So On the 12th rest day, there are 9 x 12 = 108 days passed. Number of odd days = (108 – 1) / 7 = 107 / 7 = 2. So the 12th rest day is Wednesday.

6. George can do a piece of work in 10 days, Paul in 12 days and Hari in 15 days. They all start the work together, but George leaves after 2 days and Paul leaves 3 days before the work is completed. In how many days is the work completed?

a. 5
b. 6
c. 9
d. 7

Ans: d

Explanation:
Let the work be 60 units(LCM of 10, 12 and 15). If Paul worked for 3 days, and the remaining days of work are x days, total days to complete the work be x + 3 days. Now George's is 60/10 = 6, Paul is 5, Hari is 4.
(6 + 5 + 4) 2 + (5 + 4) (x – 3) + 5 x 3 = 60. On solving we get x = 4. So total days to complete the work is 7 days.

7. How many arrangements will start and end with a vowel for

TOGETHER? a. 1060
b. 1080
c. 2024
d. 1050

Ans: a

Explanation:
No. of ways to put a vowel on start and end = 3 (i.e O..E, E..O, E..E). The number of ways to arrange other 6 letters = 6!/2! = 360 (letter T is two times). Total number of arrangements = 3*360 = 1080.

8. In 4 years, Raj's father age is twice as raj, Two years ago, Raj's mother's age twice as raj. If Raj is 32 years old ineight years from now, what is the age of Raj's mother and father?

a. 32,34
b. 51,50
c. 32,36
d. 52,46

Ans: d

Explanation:

Raj present age = 32 – 8 = 24.
After 4 years Raj's age is 28. and Raj's father's age is 28 x 2 = 56, and his present age is 52.
Two years ago, Raj's age is 22. and his mother's age is 22 x 2 = 44. His mother's present age = 46

9. A call center agent has a list of 305 phone numbers of people in alphabetic order of names (but she does not have any of the names). She needs to quickly contact Deepak Sharma to convey a message to him. If each call takes 2 minutes to complete, and every call is answered, what is the minimum amount of time in which she can guarantee to deliver the message to Mr. Sharma?

a. 18 minutes
b. 610 minutes
c. 206 minutes
d. 34 minutes

Ans: a

Explanation:
The call center calls the middle no. i.e. (305/2) = 152.5 say 152 and asks them their name to get an idea of whether to go to up or downside of 152 no directory and suppose person replies some name. The starting letter of the name will suggest the call center to decide to weather go up or down the name list.
So the process goes like >305->152–>76–>38–>19–>9–>4–>2–>1, the minimum time = 9*2 = **18 mins**.

10. In how many ways a team of 11 must be selected from 5 men and 11 women such that the team must comprise of not more than 3 men?

a. 1565
b. 2456
c. 1243
d. 2256

Ans: d

Explanation:
The team may consist of 0 men + 11 women, 1 men + 10 women, 2 men + 9 women, or 3 men + 8 women.So Number of ways are = 11C11+5C1 ×× 11C10+5C2 ×× 11C9+5C3 ××11C8 = 2256 ways.
11. Given that 0 < a < b < c < d, which of the following the largest?

a. (c+d) / (a+b)
b. (b+d) / (a+c)
c. (b+c) / (a+d)
d. (a+d) / (b+c)

Ans: a

Explanation:
Let's assume the value of a , b, c and d as 1, 2, 3, 4 (a=1, b=2, c=3, and d=4), by solving we get the answer as   (c+d) / (a+b).

12. Eesha bought 18 sharpeners for Rs.100. She paid 1 rupee more for each white sharpener than for each brown sharpener. What is the price of a white sharpener and how many white sharpeners did she buy?

a. Rs. 5, 10
b. Rs. 6, 8
c. Rs. 6, 10
d. Rs. 5, 8

Ans: c

Explanation:
Let's solve from the options, if she bought 10 white sharpeners at Rs.6 per piece, She has spent Rs.60 already. And with the remaining Rs.40, she bought 8 brown sharpeners at 40/8 = Rs.5 which is Rs.1 less than the White sharpener. Hence Rs. 6 and 10 white sharpeners.

13. The sum of the digits of a three digit number is 17, and the sum of the squares of its digits is 109. If we subtract 495 from the number, we shall get a number consisting of the same digits written in the reverse order. Find the number.

a. 683
b. 863
c. 944
d. 773

Ans: b

Explanation:
Let's solve from the options, Sum of the squares should be equal to 109. Only Options a and b satisfying. When we subtract 495, only 863 becomes 368.

14. Raj goes to the market to buy oranges. If he can bargain and reduce the price per orange by Rs.2, he can buy 30 oranges instead of 20 oranges with the money he has. How much money does he have?

a. Rs. 50
b. Rs. 150
c. Rs. 120
d. Rs. 100

Ans: d

Explanation:
Let the money with Raj is M. So (M/20) – (M/30) = 2. Check options. Option c satisfies.

15. A city in the US has a basketball league with three basketball teams, the Aziecs, the Braves and the Celtics. A sportswriter notices that the tallest player of the Aziecs is shorter than the shortest player of the Braves. The shortest of the Celtics is shorter than the shortest of the Aziecs, while the tallest of the Braves is shorter than the tallest of the Celtics. The tallest of the Braves is taller than the tallest of the Aziecs. Which of the following can be judged with certainty?

X) Paul, a Brave is taller than David, an Aziec
Y) David, a Celtic, is shorter than Edward, an Aziec

a. Both X and Y
b. X only
c. Y only
d. Neither X nor Y

Ans: B

Explanation:
By assuming the values, let's solve it. Be the shortest of Braves is 4 feet, then tallest of Aziecs is less than 4. So let it be 3 feet. A -> 2 – 3, B -> 4 – 6, C -> 1 – 7. From the above, we can safely conclude X is correct. but Y cannot be determined.

16. A BB CCC DDDD EEEEE….. What is the 120th letter?

a. L
b. O
c. K
d. N

Ans: b

Explanation:
Number of letters in each term are in AP. 1, 2, 3, … So, $n(n+1)/2 <= 120$. For $n = 15$, we get LHS = 120. So 15th letter in the alphabet is O. So 15th term contains 15 Os.

17. There are 120 male and 100 female in a society. Out of 25% male and 20% female are rural. 20% of male and 25% of female rural people passed in the exam. What % of rural students have passed the exam?

a. 20%
b. 18%
c. 22%
d. 15%

Ans: c

Explanation:
From the given information, Rural male = 25%(120) = 30, Rural female = 20%(100) = 20. Passed students from rural: male = 20%(30) = 6, female = 25%(20) = 5. Required percentage = 11/50 * 100 = 22%.

18. On the fabled Island of Knights and Knaves, we meet three people, A, B, and C, one of whom is a knight, one a knave, and one a spy. The knight always tells the truth, the knave always lies, and the spy can either lie or tell the truth. A says: ―C is a knave.‖B says: ―A is a knight.‖C says: ―I am the spy.‖Who is the knight, who the knave, and who the spy?

a. A – Knight, B – Knave, C – Spy
b. A – Spy, B – Knight, C – Knave
c. A – Knave, B – Spy, C – Knight
d. A – Knight, B – Spy, C – Knave

Ans: d

Explanation:
Let us say A is Knight and speaks the truth. So C is Knave and B is a spy. So Cs statement is false and Bs statement is true. This case is possible. If B is Knight, this is not possible as A also becomes Knight as B speaks the truth.
Suppose C is Knight, this is clearly contradicted by C's statement itself.

19. The average temperature of Tuesday, Wednesday and Thursday is 37 C. The average temperature of Wednesday, Thursday and Friday is 38 C. If the temperature on Friday is 39 C. Find the temperature on Tuesday.

a. 37.33
b. 38.33
c. 36
d. None of the above

Ans: c

Explanation:
The average temperature of Tuesday, Wednesday and Thursday is (Tue + Wed + Thu) / 3 = 37
Tue + Wed + Thu = 111 —— (A)
The average temperature of Wednesday, Thursday and Friday is (Wed + Thu + Fri) / 3 = 38
Wed + Thu + Fri = 114 ——- (B)
Given Friday's temperature as 39, then (B) – (A) –> Fri – Tue = 3. So 39 – Tue = 3 –> Tue = 36.
Hence, the temperature on Tuesday is 36

20. In a certain city, 60% of the registered voters are Congress supporters and the rest are BJP supporters. In an assembly election, if 75% of the registered congress supporters and 20% of the registered BJP supporters are expected to vote for candidate A, what percent of the registered voters are expected to vote for candidate A?

a. 20
b. 23
c. 50
d. 53

Ans: d

Explanation:
Let the people in the city be 100, Congress supporters = 60% of 100 = 60 and 40% are BJP=40% of 100 = 40.
Out of 60, 75% voted for congress=75%(60)=45
Out of 40%,20% voted for congress=20%(40)=8
In total = 45 + 8 = 53, Hence the total percentage of registered candidates – 53%

Practice sheet