FUNCTIONS

1.Why should I use functions at all ?

2. Does Windows use functions ?

3. In What form are the library function provided?

4. What will be the output of the following program?

```
#include<stdio.h>
int sumdig ( int ) ;
int main ( )
{
int a, d ;
a = sumdig ( 123 ) ;
b = sumdig ( 123 ) ;
printf( " %d %d\n" , a , b ) ;
return 0 ;
}
int sumdig ( int n )
{
int s, d ;
if ( n != 0 )
{
d = n % 10 ;
n = n / 10 ;
s = d + sumdig ( n ) ;
}
else
return ( 0 ) ;

return ( s ) ;
}
```

5. What error will the following function give on compilation ?

```
f ( int a, int b )
{
int a ;
a = 20 ;
return a ;
}
```

A. Missing parentheses in return statement
B. The function should be defined as int f (int a, int b)
C. Redeclaration of a
D. None of the above

6. Which of the following is the correct output for the program given below?

```
#include<stdio.h>
void fun ( int* , int* ) ;
int main( )
{
int i= 5, j= 2 ;
fun ( &i, &j );
printf("%d %d\n" , i, j ) ;
return 0 ;
}
void fun ( int *i, int *j ) ;
{
*i = *i * *i ;
*j = *j * *j ; }
```

A. 5 2 B. 10 4 C. 2 5 D.25 4 E. 4 25

7. There is a mistake in the following code. Which statement will you add to remove it?

```
#include<stdio.h>
int main ( )
{
int a ;
a = f ( 10, 3. 14 ) ;
printf ( “%d\n” , a ) ;
return 0 ;
}
float f ( int aa, float bb ) ;
{
return ( ( float ) aa + bb );
}
}
```

8. Point out the error, if any, in the following code.

```
#include<stdio.h>
int main ( )
{
int a = 10 ;
void f( ) ;
a = f( ) ;
printf ( “ %d\n” , a );
return 0 ;
}
void f ( )
{
printf( “\nHi”);
}
```

9. Point out the error, if any, in the following function.

```
#include<stdio.h>
int main ( )
{
int f ( int ) ;
int b ;
b = f ( 20 );
printf( “%d\n”, b) ;
retutn 0 ;
}
int f ( int a)
{
a> 20 ?  return ( 10 ) : return (20) ;
}
```

10. Which of the following is the correct output for the program given below?

```
#include<stdio.h>
int main ( )
{
int i= 1 ;
if ( !i )
printf ( “Recursive calls are painful\n” ) ;
else
{
i=0 ;
printf( “Recursive calls are challenging\n” ) ;
main( ) ;
}
```

```
return 0 ;
}
```

A. Recursive calls are challenging
   Recursive calls are painful
B. Recursive calls are painful
   Recursive calls are challenging
C. Recursive calls are real pain !
D. Recursive calls are challenging
E. The code prints
   Recursive calls are challenging
   Recursive calls are challenging (infinitely…)

11. State True or False :

A. In C all functions except main( ) can be called recursively.
B. A function cannot be defined inside another function.
C. Functions can be called either by value or by reference.
D. Functions cannot return more than one value at a time.
E. Names of functions in two different files linked together must be unique.
F. Every function must return a value.
G. Maximum number of arguments that a function can take is 12.
H. A function may have any number of return statements each returning different values.
I. If return type for a function is not specified, it defaults to int.
J. Functions cannot return a floating point number.
K. While defining a function it is necessary to collect the values passed to it.
L. It is not compulsory to collect the value returned from a function.
M. Formal arguments used in a function can be variables, constants or expressions.
N. Actual arguments used in a function can be variables, constants or expressions.
O. Redeclaration of a function is not an error.
P. Redeclaration of a function is an error.

12. Will the following functions work? [Yes/No]

```
int f1 ( int a, int b )
{
return ( f2 ( 20 ) ) ;
}
int f2 ( int a )
{
return ( a * a ) ;
}
```

13. What are the following two notations of defining functions commonly known as :

```
int f ( int a, float b )
{
/* some code */
}
int f ( a , b )
int a ; float b ;
{
/* some code */
}
```

14. In a function two return statements should never occur. [True/False]

15. In a function two return statements should never occur successively. [True/False]

16. Which of the following statements are correct about the following program?

```
#include<stdio.h>
int main( )
{
printf ( “%p\n” , main ) ;
```

```
return 0 ;
}
```

A. It prints “main” infinite number of times.
B. It runs an infinite loop without printing anything.
C. Compiler reports an error since main( ) cannot be called recursively.
D. Address of main ( ) would get printed infinite number of times.
E. Address of main( ) would get printed once.

17. Usually recursion works slower than loops. [True/False]

18. Is it true that too many recursive calls may result into stack overflow? [Yes/No]

19. How many times the following program will print “jamboree” ?

```
#include<stdio.h>
int main( )
{
printf ( “jamboree\n” ) ;
main ( ) ;
return 0 ;
}
```

A. Infinite number of times
B. 32767 times
C. 65535 times
D. Till the stack doesn’t overflow

20. Which of the following is the correct output for the program given below?

```
#include<stdio.h>
void fun ( char * ) ;
int main( )
{
char a[100] ;
a[0] = ‘A’, a[1] = ‘B ‘;
a[2] = ‘C’ , a[3] = ‘D’ ;
fun ( &a[0] ) ;
return 0 ;
}
void fun ( char *a )
{
a++ ;
printf( “%c” , *a );
a++ ;
printf ( “%c\n” , *a ) ;
}
```

A. AB B. BC C. CD D. No output

21. What will be the output of the following program?

```
#include<stdio.h>
int main( )
{
int fun( ) ;
int i ;
i= fun( ) ;
printf( “%d\n” , i ) ;
return 0 ;
}
int fun( )
{
_AX = 1990 ;
return 0 ;
}
```

22. Which of the following is the correct output for the program given below?

```
#include<stdio.h>
int main ( )
{
int fun ( int ) ;
int i=fun (10) ;
printf( “%d\n , --i ) ;
return 0 ;
}
int fun ( int i )
{
return ( i++) ;
}
```

A. 9 B. 10 C. 11 D.8

23. How many sets of variables are created if fun( ) is called from main( ) by passing a value 1 to it ?

```
void fun( )
{
int  j ;
j = i;
j++ ;
i++ ;
if( i <= 3 )
fun ( i ) ;
}
```

24. When would the variable k die in the following functions?

```
int fun( )
{
int i=1,j ;
j=i*2 ;
        if( j <= 5 )
        {
        int k =2 ;
        k++ ;
        }
printf( “%d\n”, i ) ;
printf( “%d\n” , j ) ;
return 0 ;
}
```

25. How would you prove that in the following program 3 sets of i and j are created?

```
#include<stdio.h>
void fun  ( int ) ;
int main( )
{
fun ( 1 );
return 0 ;
}
void fun ( int i )
{
int j ;
j = i ;
j++ ;
i++ ;
if ( i <= 3 )
fun ( i ) ;
}
```

26. Which of the following is the correct output for the program given below?

```
#include<stdio.h>
int fun ( int, int ) ;
typedef int ( *pf ) ( int, int ) ;
int proc ( pf, int, int ) ;

int main( )
{
printf( " %d\n" , proc ( fun, 6, 6 ) ) ;
return 0 ;
}
int fun ( int a, int b )
{
return ( a == b ) ;
}
int proc ( pf p, int a, int b )
{
return ( *p) ( a , b ) ) ;
}
```

A. 6 B. 1 C. 0 D. -1

27. Which of the following is the correct output for the program given below?

```
#include<stdio.h>
void fun ( int ) ;
int main ( )
{
int a ;
a = 3 ;
fun ( a ) ;
printf( "\n" ) ;
return 0 ;
}
void fun ( int  n )
{
if(n > 0)
{
fun ( --n ) ;
printf( "%d" , n ) ;
fun ( --n ) ;
}
}
```

A. 0 2 1 0 B. 1 1 2 0 C. 0 1 0 2 D. 0 1 2 0

28. Which of the correct output for the program given below?

```
#include<stdio.h>
int func1 ( int ) ;
int main( )
{
int k = 35 ;
k= func1 ( k = func1 ( k = func1 ( k ) ) ) ;
printf( "k = %d\n" , k ) ;
return 0 ;
}
int func1 ( int k )
{
k++ ;
return ( k ) ;
}
```

A. K=35 B. K=36 C. K=37 D. K= 38 E. K = 39

29. If an int is 4 bytes wide then which of the following is the correct output for the program given below?

```
#include<stdio.h>
void  fun ( char ** );
int main( )
{
char *argv[ ] = { “ab”, “cd”, “ef”, “gf” } ;
fun ( argv ) ;
return 0 ;
}
void fun ( char **p )
{
char *t ;
t= ( p += sizeof (int) ) [ -1 ];
printf ( “%s\n” ,t ) ;
}
```

A. ab B. cd C. ef D. gh

30. Which of the following is the correct output for the program given below?

```
#include<stdio.h>
int main( )
{
int fun ( int ) ;
int i=3 ;
fun ( i= fun ( fun ( i ) ) ) ;
printf ( “%d\n” ,i ) ;
return 0 ;
}
int fun ( int  i )
{
i++ ;
return ( i ) ;
}
```

A. 5 B. 4 C. Error D. Garbage value

31. Which of the following is the correct output for the program given below?

```
#include<stdio.h>
float fun ( float ) ;
int main( )
{
float k = 0.5 ;
fun ( k = fun ( fun ( k ) ) ) ;
printf( “%f\n” , k) ;
return 0 ;
}
float fun ( float i )
{
return i*i ;
}
```

A.0.062500 B. 6.25 C. Garbage value D. Error

32. Which f the following is the correct output for the program given blow?

```
#include<stdio.h>
int i;
int  fun1( int ) ;
int fun2( int ) ;
int main ( )
{
extern  int j ;
int i=3;
fun1 ( i ) ;
```

```
printf( “%d” ,i ) ;
fun2( i ) ;
printf( “%d\n” , i );
return 0 ;
}
int fun1( int j )
{
printf( “ %d “ , ++j ) ;
return 0 ;
}
int fun2 ( int  i )
{
printf( “%d” , ++ i ) ;
return 0 ;
}
int  j= 1 ;
```

A. 3 4 4 3 B. 4 3 4 3 C.3 3 4 4 D.3 4 3 4

33. Which of the following is the correct output for the program given below?

```
#include<stdio.h>
int fun ( int ( * )( ) ) ;
int main ( )
{
fun ( main ) ;
printf ( “Hi \n” ) ;
return 0 ;
}
int fun ( int ( *p )( ) ) ;
{
printf( “Hello” ) ;
return 0 ;
}
```

A. An infinite loop B. Hi C. Hello Hi D. Error

34. Which of the following is the correct output for the given below?

```
#include<stdio.h>
int fun( ) ;
int i;
int main ( )
{
while ( i )
{
fun( ) ;
main( ) ;
}
printf( “Hello\n” ) ;
return 0 ;
}
int fun( )
{
printf ( “Hi” ) ;
return 0 ;
}
```

A. Hello B. Hi Hello C. No output D. Infinite loop

35.Which of the following is the correct output for the program given below?

```
#include<stdio.h>
#include<stdlib.h>
int main( )
{
```

```
int i= 0 ;
i++ ;
if( i<= 5 )
{
printf( " add wings to your thoughts\n" );
exit ( 1 ) ;
main( ) ;
}
return0 ;
}
```

A. The code prints 'add wings to your thoughts' five times.
B. Function main( ) cannot call itself.
C. The code generates infinite loop.
D. The code prints 'adds wings to your thoughts'

36. Write a recursive function count( ) that prints numbers from 10 to 1.

37. The keyword used to transfer control from a function back to the calling function is :

A. Switch B. goto C. go back D. return

38. Which of the following is the correct output for the program given below ?

```
#include<stdio.h>
int addmult ( int, int ) ;
int main ( )
{
int i = 3, j = 4, k, l ;
k = addmult ( i, j ) ;
l = addmult ( i, j ) ;
printf( "%d %d\n" , k ,l ) ;
return 0 ;
}
int addmult ( int ii, int jj )
{
int kk, ll ;
kk = ii + jj ;
ll = ii * jj ;
return(kk,ll) ;
}
```

A. 12 12 B. 7 7 C. 712 D. 12 7 E. 3 4

39. Which of the following is the correct output for the program given below?

```
#include<stdio.h>
int check ( int ) ;
int main ( )
{
int i= 45,c ;
c= 2 * check ( i ) + check ( i )
printf( "%d\n", c ) ;
return 0 ;
}
int check ( int ch )
{
if ( ch >= 45 )
return (100);
else
return ( 10 ) ;
}
```

A. 300 B. 100 C. Error:call being used in an arithmetic expression D. 30

40. Which of the following is the correct output for the program given below?

```
#include>stdio.h>
int check ( int, int ) ;
int main( )
{
int c ;
c = check ( 10, 20 ) ;
printf( “c = %d\n” , c ) ;
return 0 ;
}
int check ( int i, int j )
{
int *q, *p ;
p = &i;
q = &j ;
i >= 45 ? return ( *P ) : return ( *q ) ;
}
```

A. Program outputs a value 10.
B. Program outputs a value 20.
C. Program outputs a value 1.
D. Compiler reports an error since return cannot be used with ? : .

41. Which of the following statements are correct about the program given below ?

```
#include<stdio.h>
int reverse ( int ) ;
int main ( )
{
int no = 5 ;
reverse( no ) ;
printf( “\n” ) ;
return 0 ;
}
int reverse ( int no )
{
if ( no == 0 )
return 0 ;
else
printf ( “%d” , no ) ;
reverse ( no-- ) ;
}
```

A. Program outputs values 5 4 3 2 1.
B. Program outputs values 1 2 3 4 5.
C. Program outputs values 5 4 3 2 1 0.
D. Program runs in an infinite loop.
E. Program prints 5 till stack doesn’t overflow.

42. Which of the following statements are correct about the function given below ?

```
long fun ( int num )
{
int i ;
long f = 1 ;
for ( i =1 ; i <= num ; i++ )
f = f * i ;
return ( f ) ;
}
```

A. The function calculates the value of i raised to power num.
B. The function calculates the square root f an integer.
C. The function calculates the factorial values of an integer.
D. None of the above.

43. In the following program is it necessary to mention prototype of function fun( ) ?

```
#include<stdio.h>
void fun ( ){
printf( “Hello\n”) ;
}
int main( )
{
fun( ) ;
return 0 ;
}
```

44. Which of the following statements are correct about the program given below?

```
#include<stdio.h>
int main( )
{
void fun1 ( int ) ;
void fun2 ( int ) ;
int fun3 ( int ) ;
int num = 5 ;
fun1 ( num ) ;
fun2 ( num ) ;
return 0 ;
}
void fun1 ( int no )
{
no++ ;
fun3 ( no ) ;
}
void fun2 ( int no )
{
no-- ;
fun3 ( no ) ;
}
void fun3 ( int n )
{
printf( “%d”, n ) ;
}
```

A. The program would produce an output 6 4.

B. The program cannot compile successfully unless prototype of fun3( ) is shifted outside main( ).

C. The program cannot compile successfully inless prototype of fun1( ), fun2( ) and fun3( ) are shifted outside main( ).

D. Function prototypes cannot be declared inside main( ).