ROUND 1

SET-B

QUESTIONS: 45

TIME: 1 HOUR

1. Consider the following program in C language:

```
#include <stdio.h>
main()
{
   int i;
   int *pi = &i;
   scanf("%d", pi);
   printf("%dn", i+5);
}
```

Which one of the following statements is TRUE?

A. Compilation fails.

B. Execution results in a run-time error.

C. On execution, the value printed is 5 more than the address of variable i.

D. On execution, the value printed is 5 more than the integer value entered.

2. What will be the output of the following C program segment?

```
char inchar = 'A';
switch (inchar)
{
case 'A' :
   printf ("choice A n") ;
```

```
case 'B' :
   printf ("choice B ") ;
case 'C' :
case 'D' :
case 'E' :
default:
   printf ("No Choice") ;
}
```

A. No choice

B. Choice A

C. Choice A

Choice B No choice

D. Program gives no output as it is erroneous

3. The following C function takes a simply-linked list as input argument. It modifies the list by moving the last element to the front of the list and returns the modified list. Some part of the code is left blank.

```
typedef struct node
{
  int value;
  struct node *next;
}Node;

Node *move_to_front(Node *head)
{
  Node *p, *q;
  if ((head == NULL: || (head->next == NULL))
    return head;
```

```
  q = NULL; p = head;
  while (p-> next !=NULL)
  {
    q = p;
    p = p->next;
  }
  _____
  return head;
}
```

Choose the correct alternative to replace the blank line.

A. q = NULL; p->next = head; head = p;

B. q->next = NULL; head = p; p->next = head;

C. head = p; p->next = q; q->next = NULL;

D. q->next = NULL; p->next = head; head = p;

4.

```
main()
{
        static int k;
        int m= (k>5?(k<=10?50:48):98);
        printf("%c",m);
}
```

A. b
B. 0
C. 98
D. 1

5. Recursive functions are executed in

A. First in First out order

B. Last in First out order

C. Parallel Fashion

D. Load Balancing

6.

```
for(int i=1;i<5;i=i+0.5)
        printf("%d",i);
```

A. It prints 1,2,3,4,5 and stops
B. It prints 1,1.5,2,2.5,3,3.5,4,4.5,5 and stops
C. It prints 1,2,3,4,5 and repeats forever.
D. It prints 1,1,1,1,1 and repeats forever.

7. Which combination of the integer variables x,y and z makes the variable 'a' get the value 4 in the following expression?

a=(x>y)?((x>z)?x:z)?((y>z)?y:z)

A. x=3,y=4,z=2

B. x=6,y=5,z=3

C. x=6,y=3,z=5

D. x= 5, y=4, z=5

8. Consider the following recursive C function that takes two arguments

unsigned int foo (unsigned int, n, unsigned int r)

{

if n>0 return n% foo(n/r,r);

else return 0;

}

What is the return value of the function foo,when it is called as foo (513,2)?

A. 9 B. 8

C. 5 D. 2

9. Consider the following C function

```
void swap (int a, int b)
{
  int temp;
  temp = a;
  a = b;
  b = temp;
}
```

In order to exchange the values of two variables x and y.

A. Call swap (x, y)

B. Call swap (&x, &y)

C. swap(x,y) cannot be used as it does not return any value

D. swap(x,y) cannot be used as the parameters are passed by value

10.What is the output of the following C code? Assume that the address of x is 2000 (in decimal) and an integer requires four bytes of memory.

```
#include <stdio.h>

int main()

{

unsigned int x[4][3] = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}, {10, 11, 12}};

printf("%u, %u, %u", x+3, *(x+3), *(x+2)+3);

}
```

A. 2036, 2036, 2036
B. 2012, 4, 2204
C. 2036, 10, 10
D. 2012, 4, 6

11.The output of executing the following C program is _____.

```
# include <stdio.h>

int total(int v)
{
  static int count = 0;
  while (v) {
    count += v & 1;
    v >>= 1;
  }
  return count;
}

void main()
{
  static int x = 0;
```

```
    int i = 5;
    for (; i> 0; i--) {
       x = x + total(i);
    }
    printf ("%d\n", x) ;
}
```

A. 23
B. 24
C. 26
D. 27

12.Consider the C program shown below.

```
# include <stdio.h>
# define print(x)  printf ("%d", x)
int x;
void Q(int z)
{
  z += x;
  print(z);
}
void P(int *y)
{
  int x = *y+2;
  Q(x);
  *y = x-1;
  print(x);
}

main(void)
{
  x=5;
  P(&x);
  print(x);
  getchar();
}
```

The output of this program is

A. 1276
B. 22 12 11
C. 14 6 6
D. 766

13.Consider the following C-program:

```
void foo(int n, int sum)
{
  int k = 0, j = 0;
  if (n == 0) return;
    k = n % 10;
```

```
  j = n / 10;
  sum = sum + k;
  foo (j, sum);
  printf ("%d,", k);
}

int main ()
{
  int a = 2048, sum = 0;
  foo (a, sum);
  printf ("%d\n", sum);

  getchar();
}
```

What does the above program print?

A. 8, 4, 0, 2, 14
B. 8, 4, 0, 2, 0
C. 2, 0, 4, 8, 14
D. 2, 0, 4, 8, 0

14. Consider the following C program segment:

```
char p[20];
char *s = "string";
int length = strlen(s);
int i;
for (i = 0; i < length; i++)
    p[i] = s[length — i];
printf("%s",p);
```

The output of the program is :

A. gnirts

B. gnirt

C. string

D. no output is printed

15. The results returned by functions under value-result and reference parameter passing conventions

A. Do not differ

B. Differ in the presence of loops

C. Differ in all cases

D. May differ in the presence of exceptions

16. What is printed by the following C program?

```
$include <stdio.h>
int f(int x, int *py, int **ppz)
{
  int y, z;
  **ppz += 1;
   z  = **ppz;
  *py += 2;
   y = *py;
   x += 3;
   return x + y + z;
}
void main()
{
   int c, *b, **a;
   c = 4;
   b = &c;
   a = &b;
   printf( "%d", f(c,b,a));
   getchar();
```

}

A. 18

B. 19

C. 21

D. 22

17. Consider the following declaration of a two dimensional array in C:

char a[100][100];

Assuming that the main memory is byte-addressable and that the array is stored starting from memory address 0, the address of a [40][50] is :

A. 4040

B. 4050

C. 5040

D. 5050

18.#include <stdio.h>

```
int main() {
float sum = 0.0, j = 1.0, i = 2.0;

while (i / j > 0.0625) {

        j = j + j;
        printf("%f\n", sum);
};
return 0;
}
```

The number of times variable sum will be printed When the above program is executed is _____.

A. 5

B. 6

C. 4

D. 0

19.Consider the following C program.

```
#include <stdio.h>
#include <string.h>

void printlength (char *s, char *t)
{
  unsigned int c = 0;
  int len = ((strlen (s) - strlen (t)) > c) ? strlen (s) : strlen (t);
  printf("%d\n", len);
}
void main()
{
  char *x = "abc";
  char *y = "defgh";
  printlength(x, y);
}
```

The output of the program is _____.

A. 2
B. 3
C. 4
D. 5

20. A program P reads in 500 integers in the range [0, 100] representing the scores of 500 students. It then prints the frequency of each score above 50. What would be the best way for P to store the frequencies?

A. An array of 50 numbers B. An array of 100 numbers

C. An array of 500 numbers D. A dynamically allocated array of 550 numbers

21. int y=9;

printf(“%d%d%d”,x=y,--y,y+10,y);

A. 18,18,19 B. 8,8,19,9

C. 8,8,19 D. None of these

22. How many times the word ‘print’ shall be printed by the following program segment?

```
for(i=1;i<=2;i++)

for(j=1;j<=2;j++)
```

for(k=1;k<=2;k++)

printf(“print/n”);

A. 1 B. 3

C. 6 D. 8

23. main()

```
{
    int x =128;
    printf(“%d”,1+ x++);
}
```

A. 128 B. 129

C. 130 D. 131

24. The following C declarations:

```
struct node
{
  int i;
  float j;
};
struct node *s[10] ;
```

A. An array, each element of which is a pointer to a structure of type node

B. A structure of 2 fields, each field being a pointer to an array of 10 elements

C. A structure of 3 fields: an integer, a float, and an array of 10 elements

D. An array, each element of which is a structure of type node

25. Consider the following C declaration

```
struct {
   short s [5]
```

```
   union {
       float y;
       long z;
   }u;
} t;
```

Assume that objects of the type short, float and long occupy 2 bytes, 4 bytes and 8 bytes, respectively. The memory requirement for variable t, ignoring alignment considerations, is:

A. 22 bytes

B. 14 bytes

C. 18 bytes

D. 10 bytes

26. What does the following program print?

```
#include
void f(int *p, int *q)
{
  p = q;
 *p = 2;
}
int i = 0, j = 1;
int main()
{
  f(&i, &j);
  printf("%d %d n", i, j);
  getchar();
  return 0;
}
```

A. 2 2

B. 2 1

C. 0 1

D. 0 2

27. #include<stdio.h>

```
int f(int *a, int n)
{
  if(n <= 0) return 0;
  else if(*a % 2 == 0) return *a + f(a+1, n-1);
  else return *a - f(a+1, n-1);
}

int main()
{
  int a[] = {12, 7, 13, 4, 11, 6};
  printf("%d", f(a, 6));
  getchar();
  return 0;
}
```

A. -9

B. 5

C. 15

D. 19

28. The most appropriate matching for the following pairs

X: m=malloc(5); m= NULL; 1: using dangling pointers

Y: free(n); n->value=5; 2: using uninitialized pointers

Z: char *p; *p = 'a'; 3. lost memory is:

A. X—1 Y—3 Z—2

B. X—2 Y—1 Z –3

C. X—3 Y—2 Z—1

D. X—3 Y—1 Z—2

29. The following C function takes a single-linked list of integers as a parameter and rearranges the elements of the list. The function is called with the list containing the integers 1, 2, 3, 4, 5, 6, 7 in the given order. What will be the contents of the list after the function completes execution?

```
struct node
{
  int value;
  struct node *next;
};
void rearrange(struct node *list)
{
  struct node *p, * q;
  int temp;
  if ((!list) || !list->next)
     return;
  p = list;
  q = list->next;
  while(q)
  {
    temp = p->value;
    p->value = q->value;
    q->value = temp;
    p = q->next;
    q = p?p->next:0;
  }
}
```

A. 1,2,3,4,5,6,7

B. 2,1,4,3,6,5,7

C. 1,3,2,5,4,7,6

D. 2,3,4,5,6,7,1

30. Which of the following is true :

A. There is no exponential operator in C.
B. There is no way to calculate the exponential value.
C. There is a function in C to calculate exponential value.
D. None of above

31. Consider the following C function:

```
int f(int n)
{
  static int i = 1;
  if (n >= 5)
    return n;
  n = n+i;
  i++;
  return f(n);
}
```

The value returned by f(1) is

A. 5

B. 6

C. 7

D. 8

32. In the C language

A. At most one activation record exists between the current activation record and the activation record for the main

B. The number of activation records between the current activation record and the activation record for the main depends on the actual function calling sequence.

C. The visibility of global variables depends on the actual function calling sequence.

D. Recursion requires the activation record for the recursive function to be saved on a different stack before the recursive function can be called.

33.Consider the following C program:

```
#include<stdio.h>
int r(){
int static num=7;
return num--;
}
int main() {
for(r();r();r()) {
printf("%d ",r());
};
return 0;
}
```

Which one of the following values will be displayed on execution of the programs?

A. 41
B. 52
C. 63
D. 630

34.

```
#include<stdio.h>
#include<string.h>
int main() {
   char* c=”GATECSIT2017”;
   char* p=c;
   printf(“%d”, (int)strlen(c+2[p]-6[p]-1));
   return 0;
}
```

The Output of the following program is____

A. 1
B. 2
C. 4
D. 6

35.

```
int i=1,j=1;
for( ; ; )
{
if(i>5)
```

```
break;
else
j+=i;
printf(\n%d",j)'
i+=j;
}
```

A. 2,3,5

B. 2,5

C. Error

D. None of these

36.Consider the following recursive C function that takes two arguments

```
unsigned int foo(unsigned int n, unsigned int r) {
if (n > 0) return (n%r + foo (n/r, r ));
else return 0;
}
```

What is the return value of the function foo when it is called as foo(513, 2)?

A. 9
B. 8
C. 5
D. 2

37. The C language is:

A. A context free language

B. A context sensitive language

C. A regular language

D. Parasable fully only by a Turing machine

38. Assume the following C variable declaration

```
int *A [10], B[10][10];
```

of the following expressions

I A[2]
II A[2][3]
III B[1]
IV B[2][3]

which will not give compile-time errors if used as left hand sides of assignment statements in a C program ?

A. I, II, and IV only
B. II, III, and IV only
C. II and IV only

D. IV only

39. Consider the function func shown below:

```
int func(int num)
{
   int count = 0;
   while (num)
   {
      count++;
      num >>= 1;
   }
   return (count);
}
```

The value returned by func(435) is _____.

A. 8

B. 9

C.10

D.11

40. Choose the correct option to fill ?1 and ?2 so that the program below prints an input string in reverse order. Assume that the input string is terminated by a newline character.

```
void reverse(void)
 {
  int c;
  if (?1) reverse();
  ?2
}
```

```
int main()
{
  printf ("Enter Text ") ;
  printf ("n") ;
  reverse();
  printf ("n") ;
}
```

A. ?1 is (getchar() != '\n')

   ?2 is getchar(c);

B. ?1 is (c = getchar()) != '\n')

   ?2 is getchar(c);

C. ?1 is (c != '\n')

   ?2 is putchar(c);

D. ?1 is ((c = getchar()) != '\n')

   ?2 is putchar(c);

41.
```
int arr[]={1,2,3,4};
    int count=0;
    incr()
    {
    return ++count;
    }
    main()
    {
    arr[count++] = incr();
    printf("%d",arr[count]);
    }
```

A. 1

B. 2

C. 3

D. 4

42.
```
main()
    {
```

```
    int x=0;
    while(x<=10)
    for( ; ; )
    if(++x%10 == 0)
    break;
    printf("%d",x);
}
```

A. 1

B. Compilation error

C. 20

D. None of the above

43. Output of the following is

```
void f(int *p, int *q)
{
p=q;
*p=2;
}
int i=0,j=1;
int main()
{
f(&i,&j);
printf("%d%d",i,j);
return 0;
}
```

A. 2 2

B. 2 1

C. 0 1

D. 0 2

44. Consider the following program fragment for reversing the digits in a given integer to obtain a new integer. Let n = D1D2…Dm

```
int n, rev;

rev = 0;

while (n > 0)

{

  rev = rev*10 + n%10;

  n = n/10;
```

}

The loop invariant condition at the end of the ith iteration is:

A. The loop invariant condition at the end of the ith iteration is:

B. n = Dm-i+1…Dm-1Dm and rev = Dm-1….D2D1

C. n != rev

D. n = D1D2….Dm and rev = DmDm-1…D2D1

45.What does the following fragment of C-program print?

```
char c[] = "GATE2011";
char *p =c;
printf("%s", p + p[3] - p[1]) ;
```

A. GATE2011

B. E2011

C. 2011

D. 011