Unit-2 Practice Questions

1.Names of parameters in a function prototype have to match the names given in the function definition. TRUE/FALSE

2.Briefly explain about function prototypes.

3.Write a function num_digits(n) that returns the number of digits in n (a positive integer)

4.What is the output for the following code:

```
 #include int what(int a, int n)
{
 if(n == 0)
return 1;
 else if(n % 2)
return a * what(a * a, n / 2);
else return what(a * a, n / 2);
 }
int main()
{
int a = 3, b = 5;
printf("%d\n", what(a, b));
}
```

5.Which of the following would be valid prototypes for a function that returns nothing and has one double parameter? a. void f(double x); b. void f(double); c. void f(x); d. f(double x);

6.Write functions that return the following values. (Assume that a and n are parameters, where a is an array of int values and n is the length of the array) a. The largest element in a b. The average of all elements in a c. The number of positive elements in a

7.Write the following function: float compute_GPA(char grades[], int n); the grades array will contain letter grades (A, B, C, D, or F, either uppercase or

lowercase); n is the length of the array. The function should return the average of the grades (assume that A = 4, B = 3, C = 3, D = 1, and F= 0)

8.Write a program to find the gcd of 2 numbers using recursion.

9.What will be the output of the following C code?

```
#include<stdio.h>
void foo();

int main()
{
   printf("1 ");
   foo();
}

void foo()
{
   printf("2 ");
}
```

10.What will be the output of the following C code?

```
#include<stdio.h>

void m()
{
   printf("hello");
}

int main()
{
   int k = m();
   printf("%d", k);
}
```

11.What will be the output of the following C code?

```
#include<stdio.h>

void v1(int* q);

int main(){
   int a = 100;
   int *p = &a;
   v1(p);
   printf("%d and %d\n", a, *p);
```

```
    return 0;
}
void v1(int* q){
    int temp = 999;
    *q = temp;
}
```

12.What will be the output of the following code:

```
#include <stdio.h>

void foo(int*);

int main()
{
    int i = 10;
    foo((&i)++);
}

void foo(int *p) {
    printf("%d\n", *p);
}
```

13.Write the output for the following code:

```
#include<stdio.h>
int main()
{
    void demo();
    void (*fun)();
    fun = demo;
    (*fun)();
    fun();
    return 0;
}
void demo()
{
    printf("C Program ");
}
```

14.Write the output for the following code:

```
#include<stdio.h>
int f(int x);
```

```
int main(){
   int n;
   n=f(6);
   printf("%d",n);
}
int f(int x){
   if(x==2) return 2;
   else
   {
      printf("+");
      return f(x-1);
   }
}
```

15.How many times is "a" printed when the following C code is executed?

```
#include<stdio.h>
int f1(int b);
int main(){
   int a;
   a=f1(10);
   printf("%d",a);
   return 0;
}
int f1(int b){
   if(b==0) return 0;
   else {
      printf("a");
      return f1(b--);
   }
}
```

16.Define pointer. How can you declare and initialize it.

17.What are the features of pointers? Write a C program to print address of a variable

18.With proper examples explain different arithmetic operations on pointers.

19.Write a C program to show that pointer of any data type occupies same space.

20.Write a C program to read and print an array of elements using pointers

21.What is the output?

```
#include<stdio.h>

void v1(int* q);

int main()
{
   int a = 100;
   int *p = &a;
   v1(p);
   printf("%d and %d\n",a,*p);
   return 0;
}

void v1(int* q)
{
   int temp=999;
   *q=temp;
}
```

22.What is the output?

```
#include<stdio.h>
int main()
{
   char ch[20] = "PES";
   char *ch1 = ch;
   printf("%s",ch1);
   return(0);
}
```

23.What is the output?

```
#include<stdio.h>
int main()
{
   char ch[20]="PES";
   char *ch1 = ch;
   printf("%d",sizeof(ch1));
```

```
    return(0);
}
```

24.What is the output?

```
#include<stdio.h>
int main()
{
    char a[] = "whatsapp";
    char *b = "when";
    int i;
    for(i=0;*b!='\0';i++,b++)
    {
        a[i]=*(b+i);
    }
    printf("%s",a);
    return(0);
}
```

25.What is the output?

```
#include<stdio.h>
int main()
{
    int a[]={23,33,56,12};
    printf("%d ",*a);
    *(a+2)=90;
    printf("%d",*(a+2));
    return(0);
}
```

26.Why do array subscripts starts at 0 instead of 1?

27.Define an array. How to initialize one-dimensional array? Explain with suitable examples.

28.Write a C program to sort the given array elements in Ascending order.

29.Write a C program to read N integers into an array A and to find the (i)sum of odd numbers,(ii) sum of even numbers,(iii) average of all numbers. Output the results computed with appropriate headings

30.Write a C program to search an element using linear and binary techniques

31.Write a C program to find the largest element in an array

32.Using arrays, write a program to check whether a given number has repeated digits. Ex: 456754 (has repeated digits) and 3456 (Does not have)

33.Describe the array index out of bound error in context of C array program.

34.What do you mean by compile time initialization? Give suitable example of Compile time initialization of C Array.

35.Given an array, find any two elements of the given array whose difference is 0. a = {12,33,44,66,12,9}

36.Given an array, find all the elements of the array whose sum is equal to 100. a = {23,55,66,77,50, 40, 10}

37.Write a C program to show that pointer of any data type occupies same space.

38. Write a C program to read and print an array of elements using pointers

39.What is (void*)?

40.What will be output of following program?

```
#include<stdio.h>
 int main()
 {
int a = 5,b = 10,c;
 int *p = &a,*q = &b;
c = p-q;
 printf("%d",c);
 return 0;
 }
```

41.What will be output of following program?

```
 #include<stdio.h>
 int main()
{
 int a = 320;
 char *ptr;
```

```
 ptr =(char *)&a;
 printf("%d",*ptr);
 return 0;
 }
```

42. What will be output of following program?

```
 #include<stdio.h>
 int main()
{
int a = 10;
void *p = &a;
 int *ptr = p;
printf("%u",*ptr);
return 0; }
```

43.Explain the difference between array and pointers

44.What is the output?

```
#include<stdio.h>
void change(int[]);
int main()
{
   int a[3] = {20,30,40};
   change(a);
   printf("%d %d", *a, a[0]);
   return(0);
}
void change(int a[])
{
   a[0] = 10;
}
```

45.What is the output?

```
#include<stdio.h>
void fun(int *ptr)
{
```

```
    *ptr = 30;
}
int main()
{
    int y = 20;
    fun(&y);
    printf("%d", y);
    return 0;
}
```

46.An entire array is always passed by ___ to a called function.

47.What is the output?

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

48.What is the output for the below code?

```
#include<stdio.h>
int main()
{
    const int c = -11;
    const int d = 34;
    printf("%d, %d\n", c, d);
    return 0;
}
```

49.Consider following array p[3][3]={1,2,3,4,5,6,7,8,9}; Assume the base address of array p=1000. find the address of p[2][3]? Note: 2D array follows Row major ordering

50.Write a C program to read a 2D Arrays(Matrix) and print the sum of each row

51.Write a program in C to accept two matrices and check whether they are equal using functions.

52.Write a program to accept elements and print 2D Array using Pointers

53.Write a program in C to find the row with maximum number of 1s using functions The given 2D array

0 1 0 1 1

1 1 1 1 1

1 0 0 1 0

0 0 0 0 0

1 0 0 0 1

54.Write a function to check whether a matrix is symmetric matrix or not

55.what is the output of the following code?

```
#include<stdio.h>
int main()
{
int ary[3][2] = {1,2,3,4,5,6};
printf("%d %d", ary[0][0], ary[2][1]);
return 0;
}
```

56.What is the output of C program ?

```
int main()
{
int ary[3][] = {6,5,4,3,2,1};
printf("%d %d", ary[0][0], ary[2][1]);
return 0;
}
```

57.Choose an alternative definition of C 2D array.?

```
int ary[][3] = {66,55,44,33,22,11};
```

58.what is the output of the following?

```
#include <stdio.h>

int main()
{
   int a[2][3] = {1, 2, 3, 4, 5};
   int i = 0, j = 0;

   for (i = 0; i < 2; i++)
      for (j = 0; j < 3; j++)
```

```
            printf("%d ", a[i][j]);
}
```

59.what is the output of the following?

```
#include <stdio.h>
void f(int a[][3])
{
   a[0][1] = 3;
   int i = 0, j = 0;

   for (i = 0; i < 2; i++)
       for (j = 0; j < 3; j++)
           printf("%d", a[i][j]);
}
int main()
{
   int a[2][3] = {0};
   f(a);
}
```

60.What is the output of the following C code?

```
#include <stdio.h>
void f(int a[2][])
{
a[0][1] = 3;
int i = 0, j = 0;
for (i = 0;i < 2; i++)
for (j = 0;j < 3; j++)
printf("%d", a[i][j]);
}
int main()
{
int a[2][3] = {0};
```

f(a);

}

61.Array of Arrays is also called.?

62.What is the output of the following?

```
#include<stdio.h>
int main()
{
int a[3][4] = {1, 2, 3, 4, 4, 3, 2, 1, 7, 8, 9, 0};
printf("%u, %u\n", a+1, &a+1);
return 0;
}
```

The base address(also the address of the first element) of array is 6422256.

63.Which of the statements is correct about the program?

```
#include<stdio.h>
int main()
{
int arr[3][3] = {1, 2, 3, 4};
printf("%d\n", *(*(*(arr))));
return 0;
}
```

64.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]

65.What is Enum in C? Give an example.

66.Write a program to declare an enum type year containing all months in a year and display second month.

67.What will be the output of the following C code?

```
  enum example {a = 1, b, c};

enum example example1 = 2;

enum example answer()

 {

return example1;
```

```
 }
 int main()
{
(answer() == a)? printf("yes"): printf("no");
 return 0; }
```

68.In enumeration, the set of enumeration constant may contain a duplicate value. True/False?

69.What is the output of the following code?

```
 int main ()
 { enum pesu{July=0, Aug, Dec };
 enum pesu course = Dec;
if (course ==0)
 printf("course is in July");
else if(course ==1)
 printf("course is in Aug");
 if(course==2)
printf("course is in Dec"); }
```

70.What is the benefit of using an enum rather than a #define constant?

71.What is the output of the following code?

```
  enum City {Bangalore, Mysore=5, Mangalore, Pune};
int main ()
 {
 printf("%d %d ",Mysore, Bangalore);
enum City c=Pune;
printf("%d %d", c*Mysore, c/Mysore);
return 0; }
```

72.What will be the output of the following C code?

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

```
enum colour
{
   blue, red, yellow
};
int main()
{
   enum colour c;
   c=yellow;
   printf("%d",c);
}
```

73.What will be the output of the following C code ?

```
#include<stdio.h>
#define MAX 4
enum PES
{
   a,b=3,c
};
int main()
{
   if(MAX!=c)
      printf("hello");
   else
      printf("welcome");
}
```

74.What will be the output of the following C code?

```
#include<stdio.h>
enum sample
{
   a,b,c=5
};
int main()
{
   enum sample s;
   b=10;
   printf("%d",b);
}
```

75.Predict the output of the following code .

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

```
int main()
{
   enum status {pass, fail, absent};
   enum status stud1, stud2, stud3;
   stud1 = pass;
   stud2 = absent;
   stud3 = fail;
   printf("%d %d %d\n", stud1, stud2, stud3);
   return 0;
}
```

76.What will be the output of the program ?

```
#include<stdio.h>
int main()
{
   enum days {MON=-1, TUE, WED=6, THU, FRI, SAT};
   printf("%d, %d, %d, %d, %d, %d\n", ++MON, TUE, WED, THU, FRI,
SAT);
   return 0;
}
```

77.What will be the output of the program ?

```
#include<stdio.h>
int main()
{
   enum days {MON=-1, TUE, WED=6, THU, FRI, SAT};
   printf("%d, %d, %d, %d, %d, %d\n", MON, TUE, WED, THU, FRI, SAT);
   return 0;
}
```