Question 1 (COMPULSORY) [60 marks]

Answer all parts (a) – (t). Each part carries 3 marks. No explanation required for any part of Q1

(a) What is the screen output of the following fragment of C code?

```
int i;
  int somearray[] = {3,7,4,6,8};
  for (i = 1; i <= 3; i++){
    printf("Element number %d is %d\n", i,
somearray[i]);
  }
```

Element number 1 is 7
Element number 2 is 4
Element number 3 is 6

(b) What is the screen output of the following fragment of C code?

```
int count(int A[], int size, int target) {
  int n = 0, i;
  for (i=0; i<size; i++) {if (A[i]==target)
{n++;}}
  return n;
}

void main()
{
int name[]={5,6,5,3,2,5,6,7,8,2,1,3,4,5};
int result=0;
result = count(name,20,2);
printf("output is %d\n", result);
}
```

output is 2

(c) What is the screen output of the following fragment of C code?

```
int i;
for (i=1;i<5;i++){
          switch(i)
     {
     case 1:   printf("1");
     case 3: printf("3\n");
     break;
     case 4: printf("4");
     case 5: printf("5\n");
     default: printf("default\n");
                    }
}
```

13
default
3
45
default

0 = FALSE 0
0 ≠ TRUE 1

(d) What is the screen output of the following fragment of C code?

TRUE FALSE TRUE

```
int a=2, b=0, c=-2;
if (a||b&&c){
  printf("False\n");
} else {
    printf("True\n");
  }
```

false

TRUE OR FALSE AND TRUE
TRUE

(e) What is the screen output of the following fragment of C code?

TRUE

```
int j=10, y;
y = ! j;
printf("y is %d\n",y);
```

y is 0

y = NOT TRUE
y = FALSE = 0

(f) What is the screen output of the following fragment of C code?

```
int nstars = 5, stars;
while (nstars >= 1) {
    stars = 1;
    while (stars <= nstars) {
      printf("+");
      stars++;
    }
    printf("\n");
    nstars--;
}
```

+++++
++++
+++
++
+

nstars = 5
nstars = 4
nstars = 3
nstars = 2
nstars = 1

(g) What is the screen output of the following fragment of C code?

```
int i=-5,j=-i;
if (i<=-10){
  printf("first\n");
} else if ((-i)>=(-j)){
   printf("second\n");
  } else {
     printf("no match\n");
    }
```

5

second

(h) What is the screen output of the following fragment of C code?

```
double x=42.58;
printf("value is +%2.1f\n",x);
```

value is +42.6

(i) Suppose that x, y, z and w are all of type int. If the initial value of w is 30, x is 20, y is 3, and z is 2, what is the final value of w in the expression?

```
w /= x / y + y * z
```

20 3 3 2

W = W/[X/Y + Y * Z]
6 + 6
W / 12
30/12
2

2
W=2

INT
4357.3810

(j) What is the screen output of the following fragment of C code?

```
float number = 435.73810, new ;
new = ((int)(10*number))/10.0 ;
printf("number is %7.2f\n",new);
```

435.70

Number is 435.70

(k) What is the screen output of the following fragment of C code?

```
int i,j=2;
for (i=6;i>2;i--){
  j+=i;
  printf("j is %d\n",j);
}
```

(l) What is the screen output of the following fragment of C code?

```
double x=3.142;
printf("value is %4.2f",3*x);
```

(m) What is the screen output of the following fragment of C code?

```
int i=10;
while (i>5){
  i -= 2;
  printf("i is %d\n",i);
}
```

(n) What is the screen output of the following fragment of C code?

```
#include <stdio.h>
int f1(int a, int b, int c){
        return (b);
}
int f2(int a, int b){
        int c = f1(a, b, 3);
        return c+1;
}
void main()
{
        printf("result is %d\n", f1(-1,f2(2,4),2));
}
```

(o) What is the screen output of the following fragment of C code?

```
int x = -2;
int y = 3;
int* p = &y;
*p = (*p)*x - (*p)*y;
printf("x is %d and y is %d\n", x, y);
```

(p) What is the screen output of the following fragment of C code?

```
char str[]="abcdefghijklmn";
char wanted[]="cgdln";
int i, j;
for (j=0; wanted[j]!='\0'; j++){
  for (i=0; str[i]!='\0'; i++){
    if (str[i]==wanted[j]){
       str[i]='W';
       break;
    }
  }
}
printf("string=%s\n", str);
```

String = abWWefWhijkWmW

(q) What is the screen output of the following fragment of C code?

```
struct Address {
int number;
char street[20];
char city[20];
};

struct Employee {
int number;
char name[30];
int age;
char position[30];
struct Address addr;
};

void main() {
struct Employee emp;
emp.number = 22;
emp.addr.number = 56;
printf("output is %d\n", emp.number);

}
```

56

22

output is 22