Embedded Systems Task

Q1:

```c
int main(){
    char sentence[80];
    int i;
    printf("Enter line of text\n");
    gets(sentence);
    for(i=strlen(sentence)-1; i>=0; i--);
        putchar(sentence[i]);
}
```

A. The sentence will get printed in same order as it entered
B. Half of the sentence will get printed
C. The sentence will get printed in reverse order
D. None of above

Q2: What will be the output of program ?and Explain it in a simple way

Assume array begins 2024 in memory

```c
int main(){
   int arr[] = {2,3,4,5,6};
   printf("%u, %u, %u",arr,&arr[0],&arr);
   return 0;
}
```

2024 2024 2024
the first is array index whose equal array first index address
and third also is array address

Q3: C programs are converted into machine language with the help of:

1- Interpreter

2- Compiler

3- Operating System

4- None of the above

Q4: int a=b=c=1;

1- a =1 and b =1 and c=1

2- Compiler Error

3- Runtime Error

Q5: Which of the following lines of code can be used to set specific bit of A:

1- A &= ~(1 << bit)

2- A ^= 1<<bit

3- A & ~B

4- A |= 1 << bit

5- (A & 1 << bit) != 0

Q6: (Error in execution) is:

1- Syntax error
2- Semantic error
3- Runtime error
4- Logical error
5- Linker error

Q7: __type__ __var__ = __value__ ;

1- Declaration
2- strange class
3- definition
4- Casting
5- Initialization

Q8:

```
int main(){
    void *pVoid;
    pVoid = (void*)0;
    printf("%lu",sizeof(pVoid));
    return 0;
}
```

1- Assigning (void *)0 to pVoid isn't correct because memory hasn't been allocated. That's why no compile error but it'll result in run time error.
2- sizeof() operator isn't defined for a pointer of void type.

3- Assigning (void *)0 to pVoid isn't correct because a hard coded value (here zero i.e. 0) can't assigned to any pointer. That's why it'll result in compile error.

4- No compile issue and no run time issue. And the size of the void pointer i.e. pVoid would equal to size of int. pointer

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Bonus Questions:

1- Explain The Compilation process.

2- Assuming that x is declared as an int, what does the following linedo?

X = X ^ (1<<7) toggle Bit 8 in x

3- C program to Count number of Set Bits in an Integer.

4- How "INTERRUPTS" are handled by microcontrollers?

1st we write program in c files this file go into preprocessor whose repalce macros & directives and produce file .i
2nd file.i go into complier and go in three phases (front end - middle end - backend)
and check if program has errors or no after that produce an assembly file code
3rd go into assembler which convert file to machiner code
the last stage is linker whose collect all o files in one excutable code