id number: Name:

C Language Exam Examples

When writing a program, write the part following
#include <stdio.h>
int main() {

1. Integer A, B are vectors, where int A[]= {2, 5, 3}, and int B[]= {2, 3, 4} .
Write a program to calculate scalar product A•B using for loop.

2. Write a program: In the main, 3 integers x, y, z are declared. Send all of these
data to a function. In the function, find the largest number of x, y, z, return the
maximum to the main, and print it in the main.

3. Explain what this program is doing. Write the result of the execution.

```
#include <stdio.h>
void fun(int B)
{
   printf("Function 1  %d\n", B);
   B=B+10;
   printf("Function 2  %d\n", B);
   return;
}
int main()
{
   int A= 15;
   printf("Before call  %d\n", A);
   fun(A);
   printf("After call  %d\n", A);
   return 0;
}
```

4. Explain what this program is doing. Write the result of the execution.

```c
#include <stdio.h>

void fun()
{
   Int AA=30;
   printf("%d\n", AA);
   printf("Func addr %p \n", &AA);
   return;
}
int main()
{
   Int AA= 10;
   Int BB= 20;

   printf("Before call \n");
   printf("Main addr AA  %p \n", &AA);
   printf("Main addr BB  %p \n", &BB);

   fun();
   printf("After call \n");
   return 0;
```

5. A function f(x,y)= xy. For example, f(2,3)= 6.
Write a program to calculate f(x,y) for all combinations of x= 2, 4, 6, 8 and
y= 2, 4, 6, 8. (Total 16 cases)

6. Derivative of a function f can be defined as [f(x+h) - f(x)]/h. Write a program to
calculate derivative of a function $f(x)= x^2$, using h=0.01 at x= 0.2, 0.4, 0.6, 0.8,
and 1.

7. Explain what the two programs are doing.
Explain the results of printf in the main and functions (Func1, Func2)
Explain the difference between the two programs.


```c
// swap1.c
#include<stdio.h>
void swap (int *x, int *y)  {
   int temp;
   printf("Func1  %d \n", x);
   temp= *x;
   *x= *y;
   *y= temp; }

int main ( )  {
  int i=7;
   int j=9;
   swap(&i, &j);
   printf("Swap1  %d %d  \n", i, j);
}

// swap2.c
#include<stdio.h>
void swap (int x, int y)  {
   int temp;
   printf("Func2  %d \n", x);
   temp= x;
   x=y;
   y=temp;}

int main ( )  {
   int i=7;
   int j=9;
   swap(i, j);
   printf("Swap2  %d %d  \n", i, j);
}
```