COURSE: CEF207 – COMPUTER PROGRAMMING

ALLOWED TIME: 3 Hours

DATE: March 2013

SECTION A – Answer **All** the questions in this section

1. List the 32 reserved words in the C programming language
       (8 marks)
2. What do the following symbols represent in the C programming language?
       (9 Marks)

()	++	+
--	=!	--=
-	**	>
>>	&&	<
==	||	&
!=	+=	++=

3. What will be the output of the C program in Figure 1 below if successfully compiled and run for the input of
    a. 1
    b. 5
    c. 023

Figure 2

```
#include<stdio.h>

int main()

{

   int number=20;

   int *pnt;

   pnt=&number;

   printf("\nThe number is %d",number);

   printf("\nThe adress is: %d",&number);

   printf("\nThe pointer is: %d",pnt);

   printf("\nThe adress of the pointer is %d",&pnt);

   printf("\nThe value of the pointer is: %d",*pnt);

return 0;

}
```

Figure 1

```
#include<stdio.h>
main(){
int value,r_digit;
printf("Please enter your number! \n");
scanf("%d",&value);
do{
        r_digit=value%10;
        printf("%d",r_digit);
        value = value/10;
        }
while(value!=0);
printf("\n");
}
```

4. What will be the output of the C program in **figure 2** above if successfully compiled and run given that the number is stored at location 1079023060 and the pointer is in the next memory location. An integer is stored using 4 memory loactions.

SECTION B – Answer any three questions. Each question carry 15 marks

Figure 3:- Grade Point Average(GPA)

In the course of a semester students take various courses that are assessed and evaluated in various ways and a grade is given to the student for every course taken using codes (grades) such as A, B, B+,C+, C, D+, D, F with grade values 4, 3.5, 3, 2.5, 2, 1.5, 1, 0 respectively. Each course also carries a fixed credit value as determined by the program (2, 4 or 6). At the end of the semester, the students grade point is calculated using the formula:

$$GPA = \frac{course\_Grade\_value * course\_credit\_value}{total\ credit\ value\ for\ the\ student}$$

5. Using the information provided in figure 3 above and stating any assumptions made or additional information used, write a program to calculate a student's GPA

6a. How many vowels are in this sentence or in any other sentence?

6b. Writing in good simple English sentences, avoiding mathematical expressions, List and number the steps   involved and necessary to count the number of vowels in the sentence above.

6c. Write a c program to count the number of vowels in a sentence.

7. Write a recursive function which returns the greatest common devisor (gcd) of two intergers m and n given

that:
$$gcd(n, m)=gcd(n, m \bmod n)$$

8a. Write a structure declaration for a point on the X-Y plane. Use the structure declared to write the declaration for a triangle and a rectangle.

8b. Write of the structure declaration for a straight line and a function which given the coordinates of a point on the line and its gradient, displays the equation of the line.