



NATIONAL UNIVERSITY OF COMPUTER AND EMERGING SCIENCES
(KARACHI CAMPUS)
Department of Computer Sciences
Second Mid-Term Examinations Spring 2016

Subject: Introduction to Computing -CS101
Total Time: 60 Minutes
Course Instructor: Muhammad Shahzad

Date: 28th March, 2016
Total Marks: 16

Section/GR: _____

Roll Number: _____

You are advised to READ these notes:

- Attempt all questions.
- After asked to commence the exam, please verify that you have **one (1) printed page** including this title page.
- It is advisable to go through the paper once before starting with the first question.
- All questions carry **equal marks**. Marks of subparts are also equally distributed.
- Exam is a closed books and closed notes.
- Don't use pencil , write in dark blue or black pen.

Q1): Attempt all of the following short programs:

[04]

1): Write a C program to swap two numbers using call by pointers method.

2): In the English alphabet, each letter is classified as being either a vowel or a consonant. In English, the vowels are the letters a, e, i, o, and u. Write a C function named isVowel (char ch) that returns true if ch stores a lower-case English vowel and false otherwise. Then write a C function named isConsonant (char ch) that returns true if ch stores a lower-case English consonant and false otherwise. In both functions, assume that ch holds a lower-case letter from the English alphabet.

Q2) Write the result after executing the following programs

[04]

1):

```
message(int i) {  
    i % 3 ? printf("Merry! ") : printf("X'mas! ");  
}  
main() {  
    int i = 0;  
    while (i++ < 4) printf("Aloha! ");  
    printf("\n");  
    do printf("Hello! "); while (++i < 7);  
    printf("\n");  
    for (; i < 12; i++) message(++i);  
    printf("\n");  
}
```

2):

```

int func (int a, int b) {
    b *= 2;
    printf("a = %d, b = %d.\n", a, b);
    return --a * (b - 8);
}

int sub (int *a, int *b) {
    *a -= 6;
    printf("a = %d, b = %d.\n", *a, *b);
    return *a-- * ++*b;
}

main() {
    int x = 6, y = 8;
    x = func(y, y);
    printf("x = %d, y = %d.\n", x, y);
    x = sub(&y, &y);
    printf("x = %d, y = %d.\n", x, y);
}

```

Q3): Write down macro definitions for the following:

[04]

a): To test whether a character is a small case letter or not.

b): To obtain the bigger of two numbers.

Q4): Consider the following function. Rewrite it as a recursive function.

[04]

```

int sum (int n) {
    int i, sum = 0;
    for (i = 1; i <= n; i++) sum += i * (i + 1);
    return sum;
}

```