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**KABARAK UNIVERSITY**

**EXAMINATIONS**

**2008/2009 ACADEMIC YEAR**

**FOR THE DEGREE OF BACHELOR OF SCIENCE,**

**COMPUTER SCIENCE**

**COURSE CODE: COMP 111**

**COURSE TITLE: INTRODUCTION TO PROGRAMMING**

**STREAM: Y1S1**

**DAY: THURSDAY**

**TIME: 11.00 - 1.00 P.M.**

**DATE: 11/12/2008**

**INSTRUCTIONS:**

Attempt question ONE and any other TWO questions

**PLEASE TURN OVER**

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**QUESTION ONE (30 MARKS)**

a. Briefly explain the differences between high and low level languages **(4marks)**

b. Translate the following flowchart into an executable code in C language:

**(6marks)**

c i) What are the **four** basic data types in **C** language? **(2marks)**

ii) Explain when each of the data types in (i) above is used (**4marks**)

d) i) State the differences between a ***while*** loop and a ***do-while*** loop. (**2marks**)

ii) Make corrections in the following c program and show the results:

#include<stdio.h>

int main

int a = 10; i = 4;

while(I > 0)

a-= 2; i--;

printf("a is %d\n", a);

return 0; **(6marks)**

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d) Create an integer array program with the following **four** elements:

**4**, **6**, **32**, and **19**, and display the output as follows:

**Element 0 contains 4**

**Element 1 contains 14**

**Element 2 contains 37**

**Element 2 contains 19** (**6 marks**)

**Question 2 (20 marks)**

a) i) What is a *pointer*? (**1 mark**)

ii) If a variable named ***jimmy*** has been declared as an integer with an initial value of

16, using a *pointer,* write a program that would display both the value and the

address of ***jimmy***. (**6 marks**)

b) Write a program in **C** that would be used to grade the students based on the

following criteria:

1. Marks from 95 and above, one would get grade ‘A’

2. Marks from 80 and above, one would get grade ‘B’

3. Marks from 60 and above, one would get grade ‘C’

4. Marks from 50 and above, one would get grade ‘D’

5. Anyone whose score is less than 50, would be an ‘F’ (**8 marks**)

c) Correct the *syntax* errors in the following C program, by re-writing the whole program

and **showing** the output.

**#include<stdio.h>**

**{**

**int main();**

**for(i=0; i<5 );**

**{**

**printf("this time i is %d\n", i);**

**i++**

**}**

**return 0;**

} (**5marks**)

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**Question 3 (20 marks)**

a) Briefly explain the purpose of each of the following terms:

(i) Control statements (ii) keywords (iii) comments (iv) variable (**4 marks**)

b) i) What is a function? (**2 marks**)

ii) Write a program in **C** that calculates the hypotenuse of a right-angled triangle.

**Required:**

1. Declare a prototype function called **calc()**

2. The **main()** function must call **calc()** function which will find the

hypotenuse and return results to the **main()** function so that the **main()**

would display on the screen

3. The **calc()** function has three local variables, and must prompt the user for

the values of the length and width of a triangle (**10marks**)

c) What is the compiler instructed to do with the following 2 escape sequences:

(i) **\n** (ii) **\t** (**2 mark**)

d) State the purpose of the following two functions:

**i) scanf()**

ii) **printf() (2marks)**

**Question 4 (20 marks)**

a) Using a ***for loop***, write a program in **C** language that would produce the following

output:

**outer loop number is 2**

**inner loop number is 1**

**inner loop number is 2**

**outer loop number is 4**

**inner loop number is 1**

**inner loop number is 2**

**outer loop number is 6**

**inner loop number is 1**

**inner loop number is 2**

**outer loop number is 8**

**inner loop number is 1**

**inner loop number is 2 (12marks)**

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b) Draw the flowchart of the following code: (**4 marks**)

**#include<stdio.h>**

**int main() {**

**int a,b;**

**printf("enter value of a");**

**scanf("%d", &a);**

**printf("enter value of b");**

**scanf("%d", &b);**

**{**

**if(a> b)**

**printf("A");**

**else**

**printf("B");**

**}**

**return 0;**

**}**

c) Using a nested if statements, write a C program to display the following output:

10 is greater than 4

and A is equal to A

but 1 is not equal to 0 (**4 marks**)

**Question 5 (20 marks)**

a). i) Study the following program and make any necessary corrections so as to

produce some output.

**#include<stdio.h>**

**int square7(int x)**

**int main()**

**{**

**int number2**

**number2 = square(4)**

**printf(“ 4 \* 4 = %d/n”, number);**

**return 0}** (**8 marks**)

ii) Make changes in the above program in **a**(**i**) above so that the “***called􀂴*** function

will be “asking” the user to enter an integer **4** to be squared. (**6 marks**)

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c.) Explain the concepts of the following program, and then write the output if you were

to enter integer **10**: (**6 marks**)

**#include<stdio.h>**

**void lastfunc(int x);**

**int main()**

**{**

**int number;**

**printf("enter positive number to count from: ");**

**scanf("%d", &number);**

**lastfunc(number);**

**return 0;**

**}**

**void lastfunc (int x)**

**{**

**printf("%d\n", x);**

**--x;**

**if(x < 0) return;**

**else**

**lastfunc (x);**

**}**