TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR:
BACHELOR OF SCIENCE STATISTICS & COMPUTER SCIENCE
(BSSC 13J)

BIT 2123: STRUCTURED PROGRAMM ING

END OF SEMESTER EXAMINATION
SERIES: DECEMBER 2013
TIME: 2 HOURS

<u>**Instructions to Candidates:**</u>
You should have the following for this examination
- *Answer Booklet*

This paper consists of **FIVE** questions. Attempt question **ONE** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **FOUR** printed pages

Question One (Compulsory)

a) Give THREE advantages of C language. **(3 marks)**

b) Give the meaning of the following format specifiers:
   (i)   %d
   (ii) %f
   (iii) %c
   (iv) % if
   (v)   %s **(5 marks)**

c) Write a function using parameter passing that performs the addition of three integer numbers and returns an integer result. **(3 marks)**

d) Write an if statement that tests whether an integer value entered is even or odd; if it is even it should print the string "even" otherwise it prints "odd" **(5 marks)**

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e) Write C statement(s) to declare an integer variable x and assign it value 25 **(2 marks)**

f) Explain the THREE sections of a for loop **(6 marks)**

g) What is an array? Given an array arr[5] =
   {24, 67, 27, 18, 70}. Give the value of the subscript positions shown. **(6 marks)**

Subscript	Value
arr [0]	
arr [1]	
arr [3]	
arr [4]	

Question Two

a) Write a function that takes two integer parameters and prints a list of all the integers that are between both parameters e.g. if the user enters 2 and 7 the output should be 3,4,5,6 **(6 marks)**

b) What do you understand by the following:
   (i) Functioning parameter passing
   (ii) Pass by value
   (iii) Array subscript **(6 marks)**

c) What is a recursive function? Give TWO conditions that must be met in a recursive function.
   (4 marks)

d) Give the general format of the following declarations:
   (i) Function
   (ii) For loop
   (iii) Structure
   (iv) Symbolic constant **(4 marks)**

Question Three

a) Give the output of the following program:
   (i) Int count = 1, total = 0;
       while (count < = 10)

       {
       total + = count;
       count ++;
       }

   printf "%d", total **(2 marks)**

   (ii) int I;

       for (i = 1; i < = 5, i ++)

       {

               *
       printf ("   ");

```
                printf ("ln");

        }                                                               (2 marks)
```

b) Write a program that reads your first name and last name and uses one printf function to display the names in two lines. **(3 marks)**

c) A salesman is paid a commission on the following basis:

Sale value	Commission
Up to $100	Zero
Over $100 to $ 1000	2%
Over $1000	3%

Write a program that accepts the sale value and prints out the commission value (the maximum sale value is $32000) **(5 marks)**

d) Define the following terms:
  (i) Symbolic constant
  (ii) Union
  (iii) Enumerated type
  (iv) Keywords

Question Four

a) Declare a structure vehicle with the following elements; regno – an array character of size 10, model – an array character of size 15, make – an array character of size 10 and yr-of-man-an integer **(8 marks)**

b) Show how you can achieve the following operation on the structure declared above:
  (i) Declare a structure variable, My car **(2 marks)**
  (ii) Declare an array of five vehicles called mycars to read in values using a for loop.
  (7 marks)

c) Give the output of the program segment below
```
     int*P1, * P2, n;
n = 2;
P1 = &n;
P2 = P1
     Printf ("n = % d 'n"n);
     Printf ("P₁ points to % d 'n", *P₁)
     Printf (*P₂ points to % d 'n", * P₂)                              (4 marks)
```

d) Give the output of the following nested while loop.

```
                int x = 1, y;
                while (x < =5)
        {
                y=1;
                printf (" 'n"
                while (y < = x)
                {
                printf ("%d", x);
                y++;
                }
                x++;
```

     } **(2 marks)**

Question Five

a) Show how you can sum the contents of a two dimensional array; X [2] [3] using a loop.

                                                                   (5 marks)

b) Explain the use of the following string related functions. Give an example of each.
    (i)   Stramp ( )
    (ii)   Sticatl ( )
    (iii) Stilen ( )
    (iv) Strapy ( )   (8 marks)

c) What is indirection, as regards to pointers? **(2 marks)**

d) Demonstrate using an example how you can use indirection to assign a value to an integer value.
                                                                     (3 marks)
e) Differentiate between source code and object code.   **(2 marks)**