(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 7303 Roll No.

M.C.A.

(SEM. I) ODD SEMESTER THEORY EXAMINATION 2010-11

COMPUTER CONCEPTS AND PROGRAMMING IN C

Time : 3 Hours *Total Marks : 100*

Note : Question Paper carries **three** Sections. Read the instructions carefully and answer accordingly.

SECTION—A

1. This section contains 20 objective/Fill in the blanks/True-False type questions. Attempt all parts of this section : **(10×2=20)**

   (a) A compiler is :

   (i) a combination of computer hardware

   (ii) a program which translates from one high level language to another

   (iii) a program which translates from one high level language to a machine level

   (iv) none of these

   (b) A null statement can be represented by a :

   (i) new line

   (ii) blank space

   (iii) semicolon

   (iv) colon

   (c) Windows XP is a :

   (i) Multi user Multi tasking OS

   (ii) Multi user Single tasking OS

   (iii) Single user Multi tasking OS

   (iv) Single user Single tasking OS

(d) What will be the output of following program ?

```
main ( )
{int x = 3, z;
  z = x++ + ++x;
  printf("x = %d z = %d", x, z);
}
```

(i) x = 4 z = 8

(ii) x = 5 z = 8

(iii) x = 5 z = 7

(iv) x = 4 z = 7

(e) What will be the output of following program ?

```
main ( )
{ char a = 65, ch = 'C'
  printit (a, ch);
}
printit (a, ch)
{printf ("a = %d ch = %c", a, ch);
}
```

(i) A syntax error

(ii) An execution error

(iii) a = 65 ch = C

(iv) None of the above

(f) 2s complement of $(5)_{10}$ will be :

(i) 5

(ii) 6

(iii) –5

(iv) Not possible

(g) What will be the output of following program ?

```
main ( )
{ int x;
  x = –3 * – 4% –6 / –5;
  printf ("x = %d", x);
}
```

(i) Error message : Invalid indirection

(ii) x = 0

(iii) x = 3

(iv) Error message : Invalid indirection

(v) No Output

(h) The complexity of Binary Search is given by .

(i) $\log_2 n$

(ii) $\log_n 2$

(iii) $n \log_2 n$

(iv) none of the above

(i) The data structure used to perform recursion is :

(i) Queue

(ii) Stack

(iii) Linked list

(iv) Array

(j) Which variable name is invalid :

(i) gross-salary

(ii) avg

(iii) INTEREST

(iv) Salaryofemp

(k) Maximum allowable width of a variable in Turbo C is _____ characters.

(l) Binary equivalent of 762 is _____ and its octal equivalent is _____.

(m) A global variable is also known as _____ variable.

(n) The printf may be replaced by _____ function for printing the string.

(o) The pointer that is declared as _____ cannot be de-referenced.

(p) The Personal Computers are Third generation computer. (True/False)

(q) Global variables cannot be declared as auto variables types. (True/False)

(r) The predicate ! ((x > = 10) | (y = = 5) is equivalent to (x < 10) && (y ! = 5). (True/False)

(s) An integer can be multiplied to a pointer. (True/False)

(t) When two pointers are pointing the same array one pointer can be subtracted from another pointer. (True/False)

SECTION—B

2. Attempt any **three** parts of the following : **(10×3=30)**

(a) (i) Differentiate between while and do-while loop by using a suitable example.

(ii) Differentiate among the three—goto, continue and break statements giving suitable examples of each.

(b) What is an Operating System ? What are different types of Operating Systems ? Briefly explain various functions performed by an Operating System.

(c) (i) What is the concept of computer algorithms and explain how they are used in systematic development of programs.

(ii) What is the concept of Dynamic memory allocations ?

(d) Define a structure that can describe a hotel. It should have members that include the name, address, grade, average room charge, and number of rooms. Write functions to perform following operations :

(i) To print out hotels of a given grade in order of charges.

(ii) To print out hotels with room charges less than a given value.

SECTION—C

Note : Attempt any **two** parts from each question. All questions are compulsory. **(5×10=50)**

3. (a) Write a program in C to input the marks obtained by a student in 5 subjects and calculate the total and percentage and further print the following according to the percentage :

(i) if percentage is > = 75 then print Passed with Honors

(ii) if percentage is between 60-74 then print Passed with I Division

(iii) if percentage is between 50-59 then print Passed with II Division

(iv) if percentage is between 40-49 then print Passed with III Division

(v) otherwise Failed.

(b) Explain the use of high level programming language for the systematic development of programs.

(c) Differentiate any **two** of the following :

(i) Primary and Secondary Storage Devices

(ii) Call by value and Call by reference

(iii) User defined and Library functions.

4. (a) Define the Storage Class in C.

(b) Discuss the usage of macros in C.

(c) Explain the method of recursion with a suitable example.

5. (a) Develop your own function to compare two strings of same size.

(b) Write a function in C that takes an integer parameter **m** representing the month number of the year and returns the corresponding name of the month.

(c) Write a program in C to calculate the sum up to n integer numbers.

6. (a) Write a program to sort a list of n numbers.

(b) Write a function that compares two integer arrays to see whether they are identical. The function returns 1 if they are identical otherwise 0.

(c) Write a program in C to multiply to matrices. Take the size and elements of the matrices through keyboard.

7. (a) What is an array ? Explain the advantage of array of pointers with a suitable example.

(b) Write a program to read three integer values from the keyboard and displays the output stating that they are the sides of right-angled triangle.

(c) What is a Data Structure ? Why an array is called a Data Structure ?