B. Tech.

(SEM. II) EXAMINATION, 2008-09

COMPUTER CONCEPTS & PROGRAMMING IN C

Time : 3 Hours] [Total Marks : 100

Note : (i) This question paper contains three sections.
Section - A contains objective type questions,
Section - B contains short answer type Questions
and Section - C contains descriptive types questions.
(ii) Attempt all questions.

SECTION - A

Note : This section contains 20 objective type 20×1=20
questions. Answer all questions.

1 Multiple choice
(i) the binary code of (73)_{10} is
(a) 1010001
(b) 1000100
(c) 1100101
(d) 1001001
(e) 0110110

1602] [Contd..
(ii) Which of the following is not an input device?
(a) Light pen
(b) MICR
(c) Microphone
(d) Speaker
(e) None of the above.

(iii) A block is enclosed within a pair of
(a) {   }
(b) (   )
(c) [   ]
(d) <>
(e) None of the above.

(iv) The feature which permits a user to execute multiple programs simultaneously?
(a) Multi-user
(b) Multi-tasking
(c) Multi-process
(d) Multi-programming
(e) None of the above.

(v) In which of the following loops the number of iterations remain known prior to the execution of the loop?
(a) While
(b) Do-while
(c) For
(d) In none of the above.
(vi) Which operator is used for accessing the members of a structure?
   (a) dot (.)
   (b) arrow (→)
   (c) Both of the above
   (d) None of the above.

(vii) Which of the following is not a data structure?
   (a) queue
   (b) stack
   (c) tree
   (d) variable.
   (e) None of the above.

(viii) Which character terminates strings in C?
   (a) /0
   (b) \0
   (c) '\0'
   (d) !0
   (e) None of the above.

(ix) Which of the following is correct statement for checking a condition in if statement?
   (a) if (a=b)
   (b) if (a, b)
   (c) if (a b)
   (d) if (a= =b)
   (e) None of the above.
(x) At which stage 'C' preprocessor works?
(a) Before translation
(b) Before execution
(c) Before linking
(d) Before debugging
(e) None of the above

State TRUE / FALSE

(xi) The do... while statement first executes the loop body and then evaluate the loop control expression.

(xii) C functions can return only one value under their function name.

(xiii) During the evaluation of mixed expression, an implicit cast is generated automatically.

(xiv) All static variables are automatically initialized to zero.

(xv) A struct type in C is a built in data types.

Fill in the blank:

(xvi) The ________ header file contains mathematical functions.

(xvii) ________ is used to determine the order in which different operators in an expression are evaluated.

(xviii) ________ is the process of arranging the elements of an array in order.

(xix) A variable can be made constant by declaring it with the qualifier ________ at the time of initialization.

(xx) The parameters used in a function call are called ________.
Note: Attempt any three parts from this section. $10 \times 3 = 30$

2 (a) (i) Area of a triangle is given by the formula

$$A = \sqrt{S(S-a)(S-b)(S-c)}$$

where $a$, $b$ and $c$ are sides of the triangle and $S = (a + b + c)/2$. Write a 'c' program to compute the area of the triangle given the values of $a$, $b$ and $c$.

(ii) Explain different data types in 'C'.

(b) (i) Explain differences between precedence and associativity of operators with suitable example.

(ii) Write a 'C' program to test whether a given year is a leap year or not.

(c) (i) Explain difference between a flow chart and an algorithm with an example.

(ii) Write a program in 'c' to accept 10 integer numbers and print them in reverse order.
(d) (i) Write a program in 'C' to receive an integer and find its octal equivalent.

(ii) Write a C program to generate the following pattern
    *
    * *
    * * *
    * * * *

(e) (i) What is a pointer? Write a 'C' program to swap the values of two variables making use of pointers.

(ii) Write a 'c' program to copy the contents of one file to another.

SECTION - C

Note: There are five questions in the section. 10×5=50

Attempt all questions.

3 Attempt any one part:

(a) Convert the following:

(i) \((478A)_{16} = (X)_{10}\)

(ii) \((975.55)_{10} = (Y)_{2}\)

(iii) \((11001100.10)_{2} = (Z)_{16}\)

(iv) \((678)_{10} = (W)_{3}\)

(v) \((752)_{8} = (V)_{16}\)
(b) Write your own 'C' functions to implement the following standard library string functions:

(i) strlen( )

(ii) strcpy( )

4 Attempt any one part:

(a) A company insures its drivers in the following cases:

- If the driver is married.
- If the driver is unmarried, male and above 30 years of age.
- If the driver is unmarried and above 25 years of age.

In all other cases, the driver is not insured. Write a 'c' program without using logical operators to determine whether the driver is insured or not.

(b) Write a 'C' program to add first seven terms of the following series using a for loop:

\[
\frac{1}{1!} + \frac{2}{2!} + \frac{3}{3!} + \ldots
\]

5 Attempt any one part:

(a) A 5-digit positive integer is entered through the keyboard write a 'C' function to calculate sum of digits of the 5-digit number:

(i) Without using recursion

(ii) Using recursion.

[Contd..]
(b) Write macro definition with arguments for calculation of simple interest and amount. Store these macro definitions in a file called 'Interst.h'. Include this file in your program, and use the macro definitions for calculating simple interest and amount.

6 Attempt any one part:

(a) Write a program in 'C' that compares two given dates. To store a date, use a structure that contains three members namely day, month and year. If the dates are equal then display message as "equal" otherwise "Unequal".

(b) What are difference file opening modes in 'C'. Suppose a file contains student's records with each record containing name and age of a student. Write a 'C' program to read these records and display them in sorted order by name.

7 Attempt any one part:

(a) Write a 'C' program to convert a given decimal number to binary number using stack.

(b) Write short notes on the following:

(i) Dynamic Memory Allocation in 'C'

(ii) Creation of linked list in 'C'