I / II Semester B. E. (All Branches)

06 CCP 13 / 06 CCP 23 Computer Concepts and C Programming

Model Question Paper I

Time: 3 Hours Max. Marks: 100

Note: *Answer five full questions selecting at least two full questions from each part.*

Part A

1. a. With a schematic block diagram of a digital computer, describe its functional units. 6
   b. List the steps a computer follows when accepting input from a keyboard. 4
   c. Describe the two benefits of using a mouse. 4
   d. Compare CRT monitors and LCD monitors. 6

2. a. Explain why computers use the binary number system. 5
   b. List the features of the Universal Serial Bus (USB). 3
   c. Describe with a diagram the hard disk and its parts. 8
   d. What are solid-state storage devices? 4

3. a. What are the four primary functions that an operating system performs? 4
   b. Distinguish Windows and Linux operating systems 4
   c. What are the uses of a computer network? 8
   d. List the most commonly used Internet services. 4

4. a. Write a flowchart to find the roots of a quadratic equation showing all the possible conditions. 10
   b. Describe the four basic data types. How could we extend the range of values they represent? 6
   c. Express the following mathematical expressions into C expressions. 4

   i) $\alpha \sin 45^\circ + \beta \cos 30^0$

   ii) $\Pi r^2 \div 2\Pi rh$

   iii) $\tan^{-1}(1 + e^x)$

   iv) $\frac{}{\sqrt{A_1 + A_2}}$

Part B

5. a. Distinguish between the following pairs: 4
   (ii) **getchar** and **scanf** functions
   (iii) %f and %e specifications for printing

   b. Write a program that will read the values of x and evaluate the following function

   $$y = \begin{cases} 1 & \text{for } x < 0 \\ 0 & \text{for } x = 0 \\ -1 & \text{for } x < 0 \end{cases}$$

   using (i) nested **if** statements, (ii) **else if** statements (iii) conditional operator 10

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c. Illustrate the selection process of **switch** statement with a flow chart. Also list the rules for **switch** statement. 6

6. a. Write a C program to read the age of 100 persons and count the number of persons in the age group 18 to 25. Use **for** and **continue** statements. 6

b. Explain a typical example where we find the application of **goto** statement becomes necessary. 6

c. Write a C program to compute the value of Euler's number e, that is used as the base of natural logarithms. Use the formula e = 1 + 1/1! + 1/2! + 1/3! + ... + 1/n! Use a suitable loop construct. The loop must terminate when the difference between two successive values of e is less than 0.00001. 8

7. a. Identify errors, if any, in each of the following initialization statements. 4

a. **int** number[]= {0,0,0,0,0};
b. **float** item[3][2] = {0,1,2,3,4,5};
c. **char** word[]= {'A', 'R', 'R', 'A', 'Y'};
d. **int** m[2,4] = {(90,0,0,0)(1,1,1,1)};

b. Write a C program that fills a five-by-five matrix as follows: 8

- Upper left triangle with +1s
- Lower right triangle with –1s
- Right to left diagonal with zeros

Display the contents of the matrix using not more than two **printf** statements

c. Write a C program that will read the values of elements of two matrices A and B and produce the product matrix C. 8

8. a. What is prototyping? Why is it necessary? Which of the following prototype declarations are invalid? Why? 6

(i) int (fun) void;
(ii) void fun (void, void);
(iii) fun(int, float, char);

b. Distinguish between the following: 6

(i) Actual and formal arguments
(ii) Global and local variables
(iii) Automatic and static variables

c. Write your own C functions for performing following operations on strings: 8

(i) copying one string to another
(ii) comparing two strings

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