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Reg. No.............................

Name..................................

B.TECH. DEGREE EXAMINATION, MAY 2010

Third Semester

Branch : Computer Science/Information Technology

PROBLEM SOLVING AND COMPUTER PROGRAMMING (R, T)

(Prior to 2007 admisisons—Supplementary)

Time : Three Hours

Maximum : 100 Marks

Write neat and efficient C programs wherever necessary.

Part A

*Answer **all** questions briefly.*
Each question carries 4 marks.

1. Define and distinguish between algorithm and flowchart.

2. Write and explain the various steps involved in computer programming.

3. What is an expression ? What are the different operators in C ?

4. Explain getche ( ) and scanf ( ). What are the advantages of getche ( ) over scanf ( ) ? Explain.

5. Write the syntax of "switch" and "if" statements. In what ways does a "switch" statement differ from an "if" statement ?

6. What are the major components of a function definition ? Explain with an example.

7. What is the relationship between an array name and a pointer ? Illustrate how is an array name interpreted when it appears as an argument to a function.

8. With an appropriate example, show how unions, structures and arrays can be intermixed.

9. What are the three steps in accessing a file ? Explain.

10. Clearly explain the advantages of using pointers.

(10 × 4 = 40 marks)

Part B

*Answer **either** section (a) or (b) from each module.*
Each full question carries 12 marks.

Module 1

11. (a) Write the algorithm and draw a neat flowchart to test whether a given number is a palindrome or not.

(12 marks)

Or

Turn over

(b) (i) Describe the features of a good program ? How the efficiency of a program is expressed and improved.

(6 marks)

(ii) Explain the top-down and bottom-up approaches giving suitable examples. (6 marks)

Module 2

12. (a) Given three sides of a triangle. Calculate and print the perimeter and area using formatted I/O statements.

Or

(b) Explain the associativity and hierarchy of all the types of operators in C language.

(12 marks)

Module 3

13. (a) A company pays salary to an employee at the normal hourly rate of Rs. 50/ per hour, for the hours worked below 40 per week. For the overtime, i.e., for hours which exceed 40 per week, the pay will be at 1.5 times the normal rate. Write a C program to implement this to calculate the salary.

Or

(b) Write a C program to sum the series $1 + (1 + 2) + (1 + 2 + 3) + ... + (1 + 2 + ... N)$ for a given integer N.

(12 marks)

Module 4

14. (a) Write a C program to delete all the vowels from a sentence. Assume that the sequence is not more than a 90 character string.

Or

(b) Four tests are given to a class of 60 students. Write a C program that calculates the average in each test and the class average of all tests.

(12 marks)

Module 5

15. (a) Write a C program, using pointers to find the largest word in a given sentence.

Or

(b) Write an interactive file-oriented program that will maintain a list of names, addersses and telephone numbers in alphabetical order with a menu that will allow the user to selct any of the following feaures :—

(i) add a new record.

(ii) delete a record.

(iii) exit.

(12 marks)

[5 × 12 = 60 marks]