F 3456 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2010

Third Semester

Branch : Computer Science/Information Technology

PROBLEM SOLVING AND COMPUTER PROGRAMMING (R, T)

(Regular/Improvement/Supplementary)

Time : Three Hours Maximum : 100 Marks

Write neat and efficient C programs wherever necessary.

Part A

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

1. Distinguish between Top-down and Bottom-up approaches with examples.
2. Write an algorithm to determine the number of vowels in a given word.
3. List out the rules to be followed while declaring variables. Give valid and invalid examples.
4. Explain the precedence and associativity of arithmetic operators with examples.
5. Explain jumps in loops with an example.
6. Which are the two types f parameter passing used in functions ? Explain.
7. With syntax and suitable examples, explain the C declaration and initialization of 2 D arrays.
8. Distinguish between arrays, structures and unions.
9. Explain the I/O operation on a file using the standard library of C.
10. Write two different approaches to update a data file. Which one is better ? Why ?

(10 × 4 = 40 marks)

Part B

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

MODULE 1

11. (a) Explain modular, procedure-oriented and object orient programming methods. Compare and contrast them with reference to the programming approach and applications.

Or

(b) Write on algorithm to find the mean and standard deviation of n given numbers. Draw a neat flow-chart for the same.

(12 marks)

Turn over

MODULE 2

12. (a) Explain with suitable examples, the logical, relational, arithmetic and bitwise operators showing their precedence and associativity.

Or

(b) Write a C-program to generate all the three digit prime numbers. Also draw the flow chart for the same. (12 marks)

MODULE 3

13. (a) (i) What is recursion ? Explain with an example. (4 marks)

(ii) Write a function in C to accept 10 characters and to display whether each input character is a digit, or a lowercase alphabet or an upper-case alphabet ? (8 marks)

Or

(b) (i) Compare and contrast function and macro ? (4 marks)

(ii) Write a C program using "switch-case", for checking the corresponding colour for the input character and print the name of the colour, using case statements (Use R for Red, B for blue etc. Assume there are 7 possible colours). (8 marks)

MODULE 4

14. (a) (i) Bring out the meaning of array of structures. (4 marks)

(ii) Write a C program to read the following information of 120 students : Student name, roll number and marks in 8 subjects. Print the roll numbers and name of the students who have secured more than 60 % marks in total ? (8 marks)

Or

(b) Define a structure called "students" whose members are name, register number and average marks. Write a program to print the name of students of a particular branch who have passed and display the number of students passed in that branch. Also list the name and total number of students who have failed. Assume 50 % average marks considered as pass. (12 marks)

MODULE 5

15. (a) Write a program in C to perform file copy and file update. Assume a structure with data members author name, book title and price. Consider that the price of the book is to be updated.

Or

(b) Write a program in C to read a file and print it on the console 80 by 80 characters at a time. Write also a function to write it into another file with the same format. (12 marks)

[5 × 12 = 60 marks]