

B.TECH. DEGREE EXAMINATION, OCTOBER 2009

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 briefly.

Each carries 4 marks.

1. State and explain the four basic steps in developing a computer program.
2. What is a pseudocode ? Explain the advantages and give an example.
3. Explain bitwise operators in C. Discuss the order of evaluation.
4. Explain the arithmetical and logical operators in C with suitable examples.
5. In what ways does "switch" statement various from "if" statement ? How a multiple nested if statement can be replaced by "switch".
6. Write the syntax of while loop. What happens if the condition in a "while" loop is initially false ?
7. How structure variable can be declared ? How do structure variable declarations vary from structure type declaration ?
8. Can structure declarations appear inside functions ? Give an example.
9. Write the general formats for file opening and file closing commands and explain.
10. Explain the differences between "pass by value" and "pass by reference" ?

(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 find and print all the fourdigit prime numbers. (12 marks)

Or

- (B) What is meant by (i) modular ; (ii) structured ; and (iii) object-oriented programming ? Give one example each. Describe their merits.

(12 marks)

MODULE 2

12. (A) Write a C program to prepare the Electricity bill for consumers, given the following information: service number, previous meter reading, current meter reading. The output must contain service number, units consumed and Electricity charges. Take the charge as Rs. 1.25 per unit. Indicate clearly formatted I/O statements.

(12 marks)

Or

- (B) (i) What is a C constant ? Explain the categories of constants with syntax and examples.
- (ii) What is the significance of declaring a constant unsigned ? What are the different ways to declare a C constant ? Give examples.

(6 marks)

(6 marks)

MODULE 3

13. (A) Write a C program to evaluate the series $1 + 2 * 1 + 3 * 2 + \dots + N * (N - 1)$.

(12 marks)

Or

- (B) Write a C function to multiply two matrices and store the result in a third matrix. The matrices and their orders are passed as arguments. Also write the main program.

(12 marks)

MODULE 4

14. (A) Write a C program to read a sentence and to count the number of appearance of the word "the" in it.

(12 marks)

Or

- (B) Given a matrix of order 6×6 , write a C program to find the row sum, column sum and diagonal sum of the values.

(12 marks)

MODULE 5

15. (A) Write a C program, using pointers to count the number of words in a given sentence.

(12 marks)

Or

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

(12 marks)

[5 × 12 = 60 marks]