

Code : 061201

B.Tech. 2nd Semester Exam., 2014

**FUNDAMENTALS OF INFORMATION
TECHNOLOGY**

Time : 3 hours

Full Marks :

Instructions :

- (i) The questions are of equal value.
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question No. 1 is compulsory.

1. Answer any seven of the following questions :
 - (a) What is the function of program counter?
 - (b) What is the difference between RAM and ROM?
 - (c) What is an algorithm?
 - (d) Write various data types in C with examples.
 - (e) How are logical operators written in C?
 - (f) What are bitwise operators in C?
 - (g) Give an example to illustrate the concept of structures in C.

- (h) Distinguish between printf and fprintf functions.
- (i) Explain the need for array variables.
- (j) How do you declare an array of pointers pointing to integers?

2. (a) Explain about IT application in India in the following fields :
 - (i) Education
 - (ii) Entertainment
 - (iii) Automation
 - (iv) Weather forecasting
- (b) What is operating system? Explain the functions of operating system.
3. (a) Draw the block diagram of a computer and explain all the components of a computer.
- (b) What is the advantage of secondary storage? Explain various secondary storage devices.
4. (a) Write the rules for making flowchart. Explain with example.
- (b) What is meant by recursion? Explain with example.
5. (a) Declare a 12-element array of pointers to functions. Each function will accept two pointers to double-precision quantities as arguments and will return a pointer to a double-precision quantity.

- (b) Write a program to find the transpose of a given $n \times n$ matrix A . The matrix A should be declared using pointers. Your program should store the resultant in A only. No additional matrix be used.
6. (a) Write a C program to find the K th smallest element of a given array.
- (b) Explain how your program works for finding the 4th smallest element of the following data :
- 11, 2, 9, 4, 2, 7, 3, 3, 11, 8, 14, 6
7. (a) What are the control structures in C? Give an example of each.
- (b) Write a C program to sort a set of n elements using bubble sort.
8. (a) Write a C program to calculate the elements of the Pascal triangle for 10 rows and print the results.
- (b) What are various string-handling functions used in C? Explain in detail.
9. (a) Write a C program to convert a given decimal number to binary.
- (b) Write a program to count the number of vowels in a given string.
