

Paper Code: BT-14A	Roll No.											
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M Tech
FIRST SEMESTER EXAMINATION 2015-16
COMPUTER FUNDAMENTALS & PROGRAMMING

Time: 3 Hrs.

MM: 100

Note: Attempt ALL questions.

Q1: Answer any TWO parts:

(10X2=20)

- (a) Discuss the major functions of operating system. Also describe the various types of operating systems.
- (b) (i) Discuss the various types of programming languages. Why C is preferred over other programming languages?
(ii) What are the various types of memory used in computer system? Discuss.
- (c) Convert the following:
 - A. $(AB01)_{16} = (\dots)_{10}$
 - B. $(10111100.110)_2 = (\dots)_8$
 - C. $(855.50)_{10} = (\dots)_2$
 - D. $(1470)_8 = (\dots)_2$
 - E. $(110101.01)_2 = (\dots)_{10}$

Q2: Answer any TWO parts:

(10X2=20)

- (a) (i) Write a program in C to add all the odd elements of the diagonal of a matrix A(5X5) of integers.
(ii) Discuss various data types in C language with proper syntax.
- (b) Write an algorithm, and a program in C language to calculate the number of words in a given sentence, also give the frequency of vowels in that sentence.
- (c) Describe various operators in C language with proper syntax. Also discuss the significance of operator precedence with an example in C language.

Q3: Answer any TWO parts:

(10X2=20)

- (a) What is the need of function and various parameter passing methods in C? Also write a function C that accepts an array of integer as an argument and return the sum of all the elements of that array.
- (b) Write a program in C to accept a 4 digit long integer and then display the sum of all the digits of that number. Also give the flow chart for the same.
- (c) Discuss the significance of following:
 - (i) Compiler and Interpreter.
 - (ii) Top down approach and step wise refinement.

Q4: Answer any TWO parts:

(10X2=20)

- (a) Write a program in C language to create a text file, and then copy that text into other file after removing the blank spaces. Also display the total number of the characters in that file except the blanks.
- (b) (i) Give the use of any five string related library functions of C language with proper syntax.

(ii) What is a pointer variable? Explain. Also discuss various pointer arithmetic operations in C with example.
- (c) Create an appropriate structure in C for student enrollment to a University (Make suitable assumptions yourself). Then display the list of all the students who belongs to a particular city and enrolled in a given department.

Q5: Answer any TWO parts:

(10X2=20)

- (a) (i) What is a database system? Discuss various components of the database management system.
(ii) What do understand by physical and logical data independence? Explain with suitable example.
- (b) (i) What do mean by a key? Discuss various types of keys used to access records in a database.
(ii) Why ER diagrams are used? Explain with some example. Also explain various types of symbols used in an ER diagram.
- (c) Write short notes on the following with **suitable example** in C:
 - (i) Difference between switch..case and nested..if statements.
 - (ii) Type conversion in C language.
 - (iii) Difference between application software and system software.
 - (iv) Application of any two mathematical C library functions with proper syntax.