Reg. No. : | | | | | | | | | | |

T 3510

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2008.

First Semester

(Regulation 2004)

Civil Engineering

GE 1102 — FUNDAMENTALS OF COMPUTING

(Common to all branches of B.E./B.Tech. Except Marine Engineering)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. Mention the basic operations performed by data processors.

2. Determine the decimal equivalent of the hexadecimal number AC.C8.

3. Differentiate between ASCII-7 and ASCII-8.

4. Enumerate the steps involved in software development.

5. Mention the characteristics necessary for a sequence of instructions to qualify as an algorithm.

6. What are the basic logic structures used in writing structured programs?

7. Give the meanings of the following keywords in C: auto, double, int, long.

8. What is the main advantage of conditional operator? Give the syntax of conditional operators in C.

9. What are the operators exclusively used with pointers?

10. What is a nested structure?

PART B — ($5 \times 16 = 80$ marks)

11. (a) (i) Draw a block diagram depicting the basic organization of a digital computer system. Describe the various operations performed by this system. (10)

(ii) Convert $(6245.14)_8$ to its decimal equivalent. (3)

(iii) Convert $(111001.101)_2$ to its decimal equivalent. (3)

Or

(b) (i) Describe the key hardware and software features of the five generations of computers (10)

(ii) Convert the following numbers into their binary equivalents :

$(59.6825)_{10}$, EBC_{16}, 654_8 (6)

12. (a) (i) Using binary notation, write EBCDIC coding for the word PROGRAM. (4)

(ii) Using binary notation, write BCD coding for the word COMPUTER. (4)

(iii) With suitable examples, explain how multiplication and division operations are performed within a computer by using additive approach. (8)

Or

(b) (i) Discuss the importance of system software for a computer system. Describe briefly some of the most commonly known types of system software. (8)

(ii) Describe briefly any four commonly known application software. (4)

(iii) What is a shareware? What are the advantages and limitations of using a shareware? (4)

13. (a) (i) What do you mean by pseudocode? Write the pseudocode to find out whether a given quadrilateral ABCD is a rhombus. (8)

(ii) Describe briefly the key features supported by modern word-processing packages. (8)

Or

(b) (i) Mention the various guidelines to be followed while drawing a flowchart. Discuss the advantages and limitations of flowcharting. (8)

(ii) What is a graphics software? Describe the key features supported by modern graphics packages. (8)

14. (a) (i) Differentiate between operator and operand. Given an example. Describe the various types of operators supported by C. (8)

(ii) Write C assignment statements to evaluate the following equations :

$$\text{Area} = \pi r^2 + 2\pi r h$$

$$\text{Side} = \sqrt{a^2 + b^2 - 2ab\cos(x)}\,.$$ (4)

(iii) Write a program in C to find Fibonacci series upto 100. (4)

Or

(b) (i) Describe the features of primary data types and user-defined data types in C. (8)

(ii) Write a program to find the number of and sum of all integers greater than 100 and less than 300 that are divisible by 7. (8)

15. (a) (i) Explain the need for array variables. With respect to arrays, describe the following : Declaration of array, Two-dimensional array and Accessing an array element. (8)

(ii) What are the advantages of using pointers? How are pointers declared and initialized? How is the value of a variable accessed using pointers? Give examples. (8)

Or

(b) (i) Describe the categories of functions used in C. (8)

(ii) Explain the various stages involved in program design. (8)