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23AES0501

B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2024.

First Semester

INTRODUCTION TO PROGRAMMING

(RU20 Regulations)

Time : 3 Hours *Max. Marks : 70*

PART — A

(Compulsory Question) **(10 × 2 = 20 Marks)**

Answer the following.

1. (a) What is an algorithm in the context of programming?
   (b) Differentiate between a compiler and an interpreter.
   (c) What is the primary advantage of using a "switch" statement?
   (d) Explain the purpose of the "break" statement in loops.
   (e) Explain how to initialize and access elements in the array.
   (f) How are array indices typically used to access elements?
   (g) Explain the difference between structures and unions.
   (h) What is a pointer?
   (i) Distinguish between text files and binary files.
   (j) What is file handling in programming?

PART — B

Answer ONE full question from each Unit; All questions carry equal marks **(5 × 10 = 50 Marks)**

UNIT I

2. (a) Explain the compilation and execution process in programming languages. (5)
   (b) Evaluate the social, economic and cultural implications of the computer revolution. (5)

Or

3. (a) Explain the role of the operating system in managing hardware and software resources. (5)
   (b) Explain the process of compilation and execution of a program, including the roles of the compiler, interpreter and linker. (5)

UNIT II

4. (a) Define control structures and explain their purpose in directing the flow of execution in a program. (5)

(b) Describe the syntax and semantics of conditional statements and provide examples of their use in different programming scenarios. (5)

Or

5. (a) Discuss the significance of conditional statements in programming. (5)

(b) Demonstrate how to create nested control structures to solve more complex programming problems. (5)

UNIT III

6. (a) Discuss the role of indexing in arrays, including zero-based indexing. (5)

(b) Compare the advantages and disadvantages of using two-dimensional arrays over one-dimensional arrays in certain scenarios. (5)

Or

7. (a) Explain the importance of string manipulation in various applications, such as text processing, data analysis, and web development. (5)

(b) Write programs that demonstrate the following operations on arrays of integers: (5)

(i) Declaration and initialization

(ii) Accessing elements using indexing

UNIT IV

8. (a) How do these operators contribute to memory management in programming? (5)

(b) Discuss the concept of nested structures and their applications. (5)

Or

9. (a) Explain union declaration and memory allocation, highlighting the distinction from structures. (5)

(b) Explain how pointer arithmetic facilitates array manipulation and memory traversal. (5)

UNIT V

10. (a) Explore the significance of functions in programming. (5)

(b) Explain the fundamental concepts of file input/output (I/O) in programming, including opening, closing, reading and writing files. (5)

Or

11. (a) Differentiate between text files and binary files, explaining their storage formats and appropriate use cases. (5)

(b) Define and compare the scope and lifetime of variables. (5)