

Roll No. ,

1E3106

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B. Tech. I - Sem. (Main/Back/Re-back) Exam., Jan. - 2026
1FY3-06 Programming for Problem Solving

Time: 3 Hours

Maximum Marks: 70

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL2. NIL**PART - A****[10×2=20]****(Answer should be given up to 25 words only)****All questions are compulsory**

- Q.1 Differentiate between compiler and interpreter.
- Q.2 Find out 9's complement of this number: $(744)_{10}$
- Q.3 What is secondary memory? Give examples.
- Q.4 What is the role of cache memory in computer performance?
- Q.5 Define the role of the Control Unit (CU) in the processing operations of a computer system.

- Q.6 What are different types of computer languages?
- Q.7 Compare different types of computer memories based on various criteria like storage capacity, access speed and cost per bit.
- Q.8 Define the properties of C arrays.
- Q.9 What do you understand by the term type casting in C programming?
- Q.10 What are different bitwise operators in C?

PART - B

[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

- Q.1 Illustrate the purpose and syntax of various decision-making statements in C.
- Q.2 Convert the following -
- (i) $(345)_{10} = (?)_2$
 - (ii) $(23B)_{16} = (?)_{10}$
 - (iii) $(3815)_{10} = (?)_8$
 - (iv) $(1111)_2 = (?)_{10}$
- Q.3 Describe the representation of alphabets using ASCII and Unicode.
- Q.4 Explain in detail the difference between SRAM (Static RAM) and DRAM (Dynamic RAM). Describe how each type stores data, their speed, cost, power consumption and common applications.
- Q.5 Explain one-dimensional and two-dimensional arrays in C with suitable examples. Also, write a C program to find the sum of all elements in a one-dimensional array.
- Q.6 Explain the Von Neumann architecture in detail. Discuss the steps involved in the instruction execution cycle and highlight the limitations of this architecture.

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Q.7 Write a C program to print pattern -

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* * * *
* * * *
* * *
* * *
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PART - C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

- Q.1 Write and explain the logic of a C program that reads a large text file line by line, counts the frequency of each word and stores the results in another output file.
- Q.2 What are different types of C functions? Find the factorial of a number using recursion. What are call by value and call by reference?
- Q.3 Write a C program to create a student structure using name, id and average marks using proper data types, using array of structures store and print five students' data.
- Q.4 What are pointer variables? What different applications of pointers also create a C program to demonstrate array of pointer?
- Q.5 Write a C program to perform matrix multiplication also design algorithm and flowchart with neat diagram and proper flowchart symbols.
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