

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech. III Year I Semester Regular Examinations December-2025

SYSTEM SOFTWARE PROGRAMMING

(Common to CSM & CAI)

Time: 3 Hours

Max. Marks: 70

PART-A

(Answer all the Questions 10 x 2 = 20 Marks)

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|---|---|--|-----|----|----|
| 1 | a | Define a Language Processing System. | CO1 | L1 | 2M |
| | b | List any two phases of compilation. | CO1 | L1 | 2M |
| | c | Define a Macro Processor. | CO2 | L1 | 2M |
| | d | Define absolute loader. | CO2 | L1 | 2M |
| | e | List any two top-down parsing techniques. | CO3 | L1 | 2M |
| | f | What is intermediate code? | CO3 | L1 | 2M |
| | g | What is the difference between static and dynamic linking? | CO4 | L1 | 2M |
| | h | What is a breakpoint in debugging? | CO4 | L1 | 2M |
| | i | What does pthread_create() do? | CO5 | L1 | 2M |
| | j | What is a daemon process? | CO5 | L1 | 2M |

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

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| 2 | | Discuss all the phases of compilation with suitable examples and mention the data. | CO1 | L4 | 10M |
|---|--|--|-----|----|-----|

OR

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|---|---|--|-----|----|----|
| 3 | a | Analyze the process of relocation in program execution. | CO1 | L4 | 5M |
| | b | Discuss the role of linking concepts in modular program development. | CO1 | L2 | 5M |

UNIT-II

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|---|---|--|-----|----|----|
| 4 | a | Discuss Macro instruction with an example. | CO2 | L2 | 5M |
| | b | Describe features in macro instruction. | CO2 | L2 | 5M |

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| 5 | | List out types of loader and explain it with a neat diagram. | CO2 | L2 | 10M |
|---|--|--|-----|----|-----|

UNIT-III

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|---|---|---|-----|----|----|
| 6 | a | Convert the following ambiguous grammar into unambiguous grammar:
$E \rightarrow E+E E*E id$ | CO3 | L1 | 5M |
| | b | Analyze why ambiguity is problematic in parsing. | CO3 | L4 | 5M |

OR

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|---|---|---|-----|----|----|
| 7 | a | Construct a DFA to recognize identifiers starting with a letter followed by digits. | CO3 | L6 | 5M |
| | b | Analyze the role of semantic rules in type mismatch detection. | CO3 | L4 | 5M |

UNIT-IV

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|---|---|---|-----|----|----|
| 8 | a | Compare static and dynamic linking in detail. | CO4 | L5 | 5M |
| | b | Describe how debugging techniques and breakpoints help identify program errors. | CO4 | L2 | 5M |

OR

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|---|---|---|-----|----|----|
| 9 | a | Explain the Unix/Linux shell environment. | CO6 | L2 | 5M |
| | b | Describe how redirection works in Unix/Linux shell. | CO6 | L2 | 5M |

UNIT-V

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|----|--|---|-----|----|-----|
| 10 | | Explain POSIX threads programming, including thread creation, synchronization, and termination. Provide a case study example. | CO6 | L2 | 10M |
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OR

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|----|---|--|-----|----|----|
| 11 | a | Explain the use of exec() family of functions in process creation. | CO5 | L2 | 5M |
| | b | Create the syntax for opening a file using the open() system call. | CO5 | L6 | 5M |

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