

K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

July/Aug 2025
(B. Tech) Program: Computer Engineering Scheme IIB
Supplementary Examination: TY Semester: VI
Course Code: CEC601 and Course Name: System Programming & Compiler Construction
Date of Exam: ~~26/05/2025~~ *29/07/25* Duration: 02.5 Hours Max. Marks: 60

Instructions:

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

Q. No.	Question	Max. Marks	CO	BT level
Q 1	Solve any two questions out of three: (05 marks each)	10		
a)	Compare Compiler and interpreter		CO1	An
b)	Explain design issues in macro processor.		CO3	U
c)	Draw flowchart and explain single pass assembler		CO2	U
Q 2	Solve any two questions out of three: (05 marks each)	10		
a)	Explain working of dynamic linking loader .		CO4	U
b)	What are the different loop optimization techniques?		CO6	U
c)	Explain conditional macro with suitable example.		CO3	U
Q.3	Solve any two questions out of three. (10 marks each)	20		
a)	For a given grammar below, Construct operator precedence relation matrix, assuming *, + are binary operators and 'id' is terminal symbol, and E as Non terminal. $E \rightarrow E+E$ $E \rightarrow E * E$ $E \rightarrow id$ Apply operator precedence parsing algorithm for the statement 'id + id * id'		CO5	AP
b)	Explain machine independent code optimization techniques with suitable example.		CO6	U
c)	Explain the working of compiler phases for following expression Position = initial + rate * 60.		CO5	AP
Q.4	Solve any two questions out of three. (10 marks each)	20		
a)	Consider the following grammar: $S \rightarrow aSbS \mid bSaS \mid \epsilon$. Demonstrate if the grammar is LR(0) or not.		CO5	AP

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b)	Explain various data structures used in assembler design with suitable code.	CO2	U
c)	Explain flow graph and basic blocks . Design DAG representation for given expression. $a=(a+b)*(a-c)$.	CO6	AP
