

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

**August 2023**

B.Tech Program: **Computer Engineering**

Examination: **TY** Semester: **VI**

Course Code: **CEC601** Course Name: **System Programming and Compiler Construction**

Date of Exam : 07/08/2023

Duration: **2.5 Hours**

Max. Marks: **60**

**Instructions:**

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

		Max. Marks	CO	BT level
Q 1	Solve any six questions out of eight.	12		
i)	Draw syntax tree for following expression. $m*(x+y) + (y-x)*m - y$	2	CO5	Ap
ii)	Explain working of absolute loader.	2	CO4	U
iii)	Draw block diagram depicting the order in which following system software will execute. Loader & linker, assembler, macro processor, compiler.	2	CO1	U
iv)	What is the use of DAG?	2	CO6	U
v)	Differentiate between application program and system program.	2	CO1	U
vi)	What is the use of location counter in assembler?	2	CO2	U
vii)	What is the use of argument list array in macro?	2	CO3	U
viii)	Draw left most & right most derivation for $w = aaabbabbba$ if following is given grammar. $S \rightarrow aB / bA$ $S \rightarrow aS / bAA / a$ $B \rightarrow bS / aBB / b$	2	CO5	Ap
Q.2	Solve any four questions out of six.	16		
i)	What is dynamic linking?	4	CO4	U
ii)	Write various intermediate code representation forms.	4	CO6	U
iii)	How forward reference problem is handled in two pass assembler?	4	CO2	U



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iv)	What is dynamic loading?	4	CO4	U
v)	How does symantic analysis handle type casting?	4	CO5	U
vi)	Explain operator precedence grammar.	4	CO5	U
Q.3	Solve any two questions out of three.	16		
i)	Explain code optimization techniques.	8	CO6	U
ii)	Explain pass 1 of Two Pass Macroprocessor.	8	CO3	U
iii)	Explain pass 2 of Two Pass Assembler.	8	CO2	U
Q.4	Solve any two questions out of three.	16		
i)	Explain pass 1 of Two Pass Assembler.	8	CO2	U
ii)	Explain pass 2 of Two Pass Macroprocessor.	8	CO3	U
iii)	Consider the following grammar. $S \rightarrow AaAb \mid BbBa$ $A \rightarrow e$ $B \rightarrow e$ Check if grammar is LL(1).	8	CO5	Ap

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