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

CEC601

April – May 2024
(B.Tech / M.Tech.) Program: B.Tech-Computer
Supplementary Examination: TY Semester: VI
Date of Exam: 02/08/24 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.

		Max. Marks	CO	BT level
Q 1	Solve any six questions out of eight.	12		
i)	What is backpatching in Three Address Code? Demonstrate with example.	2	CO6	U
ii)	Explain literal table, symbol table with reference to assembler.	2	CO2	U
iii)	What are different types of addresses used in relocation and linking?	2	CO4	U
iv)	Explain conditional macro with example.	2	CO3	U
v)	Explain role of device drivers.	2	CO1	U
vi)	Explain with example synthesized and inherited attributes.	2	CO5	Ap
vii)	What is the use of an argument list array in macro?	2	CO3	U
viii)	Draw syntax tree for following expression. m*(x +y) + (y-x)*m –y	2	CO6	U
Q.2	Solve any four questions out of six.	16		

i)	Write contents of symbol table and literal table for following code.
	START 500
	READ P
	READ Q
	MOVER AREG,P
	ADD AREG , Q
	MOVEM BREG, = '2'
	ADD AREG = '1'
	MOVEM AREG, R
	PRINT R
	P DS 1
	Q DS 3
	R DS 1
		4	CO1	U

ii)	Explain different ways for specifying arguments to macro call.	4	CO3	U
iii)	What are different types of relocatable programs?	4	CO4	U
iv)	Consider the following code segment. Generate Three address code for it	4	CO6	Ap

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	if a< b then
	while c > d do
	x = x + y
	else
	do
	p = p + q
	while e < = f			

v)	List rules to find FIRST and FOLLOW elements. Demonstrate with example.	4	CO5	U
vi)	Explain operator precedence parser with example.	4	CO5	U
Q.3	Solve any two questions out of three.	16		
i)	Explain working of direct linking loader. Write a sample code . Clearly show entries in all databases for the same.	8	CO4	U
ii)	Illustrate nested macro call with an example. Analyze given code and design suitable macro definition for it. clearly mention entries in MNT,MDT,ALA. LOOP1 A 1, D1 A 3, D2 A 2, D3 --- --- --- LOOP2 A 1, D2 A 2, D3 ----- LOOP3 A 3, D3	8	CO3	U
iii)	Design a predictive parser for the given grammar. E→ TQ T→ FR Q→ +TQ | -TQ | E R→ *FR | /FR |E F→ (E) | id Verify whether grammar is present in LL(1).Mention the reason.	8	CO5	Ap
Q.4	Solve any two questions out of three.	16		
i)	Draw and explain basic flowchart of Single pass Assembler.	8	CO2	U
ii)	Consider following basic block : t1 = b + c t2 = d * e t3 = b + c	8	CO6	Ap

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	t4 = t2 * t3 t5 = t4 * f x = t1 - t5 Explain following optimizations and test which are possible to be carried out with above basic blocks: 1. Common sub-expression elimination 2. Copy propagation 3. Dead code elimination.			
iii)	Construct SLR(1) parsing table for the following grammar: S → xAy | xBy | xAz A → aS |q B → q Clearly show the set of LR(0) items.	8	CO5	Ap

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