Code No.: AI601PC | R20 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
III–B.TECH–II–Semester End Examinations (Regular) - May- 2023
PRINCIPLES OF COMPILER DESIGN
(CSM)

[Time: 3 Hours] **[Max. Marks: 70]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(20 Marks)**

1. a)	Write the role of pre-processor in language processing?	[2M]
b)	Define regular expressions with example?	[2M]
c)	Give an example to eliminate the left recursion with rules?	[2M]
d)	What are the rules for constructing first() function?	[2M]
e)	What is dangling else ambiguity? Give example?	[2M]
f)	Define Syntax Directed Translation (SDT)?	[2M]
g)	Determine three address code for the given pseudo code. while(i<=100){A=A/B*20;++i; print(Avalue)}	[2M]
h)	Write the fields and uses of symbol table?	[2M]
i)	Give an example for constant propagation?	[2M]
j)	Illustrate dead code elimination?	[2M]

PART-B **(50 Marks)**

2.	What are the different phases of compiler in synthesizing the target program? Explain with an example?	[10M]
	OR	
3.	How to recognize various tokens of high level language program? Write the regular expressions and transition diagrams for each?	[10M]
4.	Construct the LL(1) parse table for the following grammar G: E ->E+T/T T ->T*F/F F ->(E)/id is it LL(1)?	[10M]
	OR	
5.	What is the importance of look ahead symbol in LR(1) parser? Construct the canonical CLR parser for *G:S->L=R|R, L->*R|id, R->L*	[10M]
6.	What is runtime stack? Explain storage allocation strategies used for recursive procedure calls. Also give functions for mknode() and mkleaf().	[10M]
	OR	
7.	What is type expression? How to construct the SDD for infix to prefix write translation scheme.	[10M]
8.a)	What is reference counting? Explain how they are used in garbage collection.	[4M]
b)	Write the algorithm to generate basic blocks and flow graph for quick sort algorithm.	[6M]
	OR	
9.a)	What is runtime stack? Explain storage allocation strategies used for recursive procedure calls.	[4M]
b)	Explain Register allocation and constant propagation with examples?	[6M]
10.	Compare and construct various techniques used for machine independent and dependent optimizations?	[10M]
	OR	
11.	Explain code motion and peephole optimization technique with steps?	[10M]

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