Code No: 136AQ **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year II Semester Examinations, May - 2019
COMPILER DESIGN
(Common to CSE, IT)

Time: 3 hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 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

(25 Marks)

1.a)	Define regular expression.	[2]
b)	Define linker and loader and explain briefly.	[3]
c)	Define ambiguous grammar.	[2]
d)	Compare SLR, CLR and LACR.	[3]
e)	What is coercion?	[2]
f)	How to find evaluation order for SDD's?	[3]
g)	What are the limitations of static allocation?	[2]
h)	Write the fields and uses of symbol table.	[3]
i)	What is common sub-expression elimination? Explain.	[2]
j)	What are induction variables? What is induction variable elimination?	[3]

PART - B

(50 Marks)

2.a) Explain the procedure to convert regular expression to Finite automata.
b) Explain various phases in the construction of compiler with a neat sketch. [5+5]

OR

3.a) What is the functionality of preprocessing and input buffering?
b) Explain compiler construction tools. [5+5]

4.a) What is left recursion? Describe the algorithm used for eliminating left recursion?
b) Eliminate left recursion in the following: [5+5]
E→E+T|T, T→T*F|F, F→(E)|id

OR

5.a) What is ambiguous grammar? Show that following grammar is ambiguous or not.
A → A + A | A − A | A * A | a
b) Verify whether the following grammar is LL(1) or not? [5+5]
E → E + T | T
T → T* F / F
F → (F) |a|b.

6.a) What are three address codes? Explain different types of representations of three address code.

b) Write three codes for x:=A[y, z] [5+5]

OR

7.a) What is type checker? Explain the specification of a simple type checker.

b) Explain translation schema for array elements. [5+5]

8.a) Explain about Heap management.

b) Define reference counting. What is the role of reference counting in garbage collection? [5+5]

OR

9.a) Give the detailed description on DAG.

b) Explain different methods for register allocation and assignment. [5+5]

10.a) Explain redundancy elimination techniques.

b) Write the principal sources of optimization. [5+5]

OR

11.a) Explain loop optimization technique with example.

b) Explain constant propagation with example. [5+5]

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