ADAMAS UNIVERSITY PURSUE EXCELLENCE	**ADAMAS UNIVERSITY** **END-SEMESTER EXAMINATION : JANUARY 2021** (Academic Session: 2020 – 21)		
Name of the Program: (Example: B. Sc./BBA/MA/B.Tech.)	MCA	**Semester:** (I/III/ V/ VII/IX)	IV
Paper Title :	Compiler Design	**Paper Code:**	ECS52104
Maximum Marks :	40	**Time duration:**	3 hours
Total No of questions:	8	**Total No of Pages:**	2
(Any other information for the student may be mentioned here)			

Answer all the Groups

Group A

Answer all the questions of the following $5 \times 1 = 5$

1. **a)** Distinguish between tokens and lexemes.

b) Explain why LALR(1) parser has less than or equal number of states that CLR(1) parser.

c) Explain when and why left recursion occurs.

d) What are the stages of analysis in the phases of compiler design ?

e) Which kind of parser is suited for ambiguous grammars and why ?

GROUP –B

Answer *any three* of the following $3 \times 5 = 15$

2. What are first and follow sets for the following grammar?

S → AB

A → aB|ε

B → bA|ε

3. Explain the Chomsky hierarch of formal grammars. Demonstrate the type of language, the corresponding grammar, memory constraints and accepting machines.

4. Define finite state automata? Design the FSA for the language

L = (a*(ab)*b*) | (a*(ba)*b*).

5. Consider the grammar

S → aB / bA

S → aS / bAA / a

B → bS / aBB / b

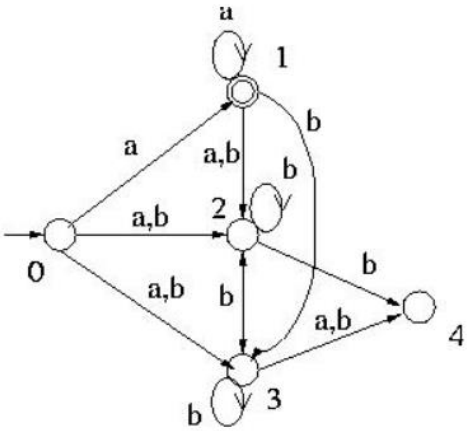
Design the left derivation and the right derivation tree for the string w = aaabbabbba

GROUP –C

Answer *any two* of the following $2 \times 10 = 20$

6. Distinguish between interpreter and compiler. What is a Symbol Table? Illustrate the phases of compilation process using a diagram. Distinguish between L-attributed and S-attributed translation. [2+1+5+2]

7. Define NFA and DFA. What are steps of converting NFA to DFA. Convert the following NFA to a DFA : [3+3+4]



8. Design the CLR(1) and LALR(1) Parsing Table for the following grammar. Comment on the acceptability of the grammar for the parser

S→Aa | bAc | dc | bda , A→d
