BRAC UNIVERSITY
Department of Computer Science and Engineering

Examination: Midterm | Semester: Spring 2025

Duration: 1 Hour 20 Minutes | **Set - A** | Full Marks: 35

CSE 420: Compiler Design

Figures in the right margin indicate marks.

Answer all the questions

COs	Questions	Marks
CO1	1. Describe the internal working mechanism of a lexical analyzer generated using the FLEX tool. In particular, what does a lex file specification converts into, how does it process the input program and what mechanisms does it apply to identify different types of tokens.	5
CO3	2. Construct the SLR(1) parser for the above grammar. *[5 points for proper automaton construction, 3 points for computing first and follows, 4 points for the action table, and 3 points for the GoTo table]* Grammar: A -> B A C B -> x C -> y A -> w A -> ε Note that ε means empty and the alphabet of terminals is {x,y,w}.	15
CO1	3. Explain with an example why an ambiguous context free grammar can never be used for the syntax analyzer of a compiler.	5
CO3	4. Consider the following grammar and look at the SLR(1) parse table below: 1. E → E + T 2. E → T 3. T → T * F 4. T → F 5. F → (E) 6. F → id	10

STATE	ACTION						GOTO		
	id	+	*	(	)	$	E	T	F
0	s5			s4			1	2	3
1		s6				acc			
2		r2	s7		r2	r2			
3		r4	r4		r4	r4			
4	s5			s4			8	2	3
5		r6	r6		r6	r6			
6	s5			s4				9	3
7	s5			s4					10
8		s6			s11				
9		r1	s7		r1	r1			
10		r3	r3		r3	r3			
11		r5	r5		r5	r5			

Show how an SLR(1) parser with above grammar rules and parsing tables process the following input string. ((id + (id)))