

BRAC UNIVERSITY
Department of Computer Science and Engineering

Examination: Midterm

Duration: 1 Hour 20 Minutes

Set - B

Semester: Spring 2025

Full Marks: 35

CSE 420: Compiler Design

Figures in the right margin indicate marks.

Answer all the questions

<u>COs</u>	<u>Questions</u>	<u>Marks</u>
CO1	1. What is a symbol table in the context of a compiler? Explain the different implementations of a symbol table. Discuss the advantages and disadvantages of each implementation.	5
CO3	2. Construct the SLR(1) parser for the above grammar. <i>[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]</i> Grammar: A \rightarrow B A C B \rightarrow x C \rightarrow y C \rightarrow w A \rightarrow ϵ Note that ϵ means empty and the alphabet of terminals is {x,y,w}.	10
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	1. Consider the following grammar and look at the SLR(1) parse table below: 1. $E \rightarrow E + T$ 2. $E \rightarrow T$ 3. $T \rightarrow T * F$ 4. $T \rightarrow F$ 5. $F \rightarrow (E)$ 6. $F \rightarrow id$	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)))