

5. Consider the following grammar:  $\{P \rightarrow P \Rightarrow P \mid P \text{ and } P \mid \text{not } P \mid (P) \mid \text{atom}\}$ . Its LR parsing table is given below. Remove the parse conflicts by assuming that and is left associative,  $\Rightarrow$  is non-associative, and the precedence of the operators (higher first) is not,  $\Rightarrow$ , and and.

	$\Rightarrow$	and	not	(	)	atom	\$	P
0			s2	s3		s4		1
1	s5	s6					acc	
2			s2	s3		s4		7
3			s2	s3		s4		8
4	r5	r5			r5		r5	
5			s2	s3		s4		9
6			s2	s3		s4		10
7	r3/s5	r3/s6			r3		r3	
8	s5	s6			s11			
9	r1/s5	r1/s6			r1		r1	
10	r2/s5	r2/s6			r2		r2	
11	r4	r4			r4		r4	

(9 p)

6. Transform the grammar of Problem 4 into an unambiguous grammar which satisfies the given associativity and precedence rules. (6 p)