1)

State	ACTION					GOTO				
	a	b	c	d	$	S'	S	A	B	C
0	s2						1	3		
1					acc					
2		s8	s6	s7					5	4
3	s10		s11	s7						9
4					r_1					
5		s12								
6			s14	s15						13
7					r_8					
8		s8	s17						16	
9					r_2					
10	r_4		r_4	r_4						
11			s11	s7						18
12	r_3		r_3	r_3						
13		r_6			r_7					
14			s14	s15						19
15		r_8			r_8					
16		r_5								
17			s21	s22						20
18					r_7					
19		r_7			r_7					
20		r_6								
21			s21	s22						23
22		r_8								
23		r_7								

A.

STACK	INPUT	ACTION
0	abbbccd$	s2
0a2	bbbccd$	s8

0a2b8	bbccd$	s8
0a2b8b8	bccd$	s8
0a2b8b8b8	ccd$	s17
0a2b8b8b8c17	cd$	s21
0a2b8b8b8c17c21	d$	s22
0a2b8b8b8c17c21c22	$	

B.

STACK	INPUT	ACTION
0	accd$	s2
0a2	ccd$	s6
0a2c6	cd$	s14
0a2c6c14	d$	s15
0a2c6c14d15	$	r8 GOTO 19
0a2c6c14C19	$	r7 GOTO 13
0a2c6C13	$	r7 GOTO 4
0a2C4	$	r1 GOTO 1
0S1	$	acc

C.

STACK	INPUT	ACTION
0	acdbaacd$	s2
0a2	cdbaacd$	s6
0a2c6	dbaacd$	s15
0a2c6d15	baacd$	r8 GOTO 13
0a2c6C13	baacd$	r6 GOTO 5
0a2B5	baacd$	s12

0a2B5b12	aacd$	r3 GOTO 3
0A3	aacd$	s10
0A3a10	acd$	r4 GOTO 3
0A3	acd$	s10
0Aa10	cd$	r4 GOTO 3
0A3	cd$	s11
0A3c11	d$	s7
0A3c11d7	$	r8 GOTO 18
0A3c11C18	$	r7 GOTO 9
0A3C9	$	r2 GOTO 1
0S1	$	acc

D.

STACK	INPUT	ACTION
0	acdbd$	s2
0a2	cdbd$	s6
0a2c6	dbd$	s15
0a2c6d15	bd$	r8 GOTO 13
0a2c6C13	bd$	r6 GOTO 5
0a2B5	bd$	s12
0a2B5b12	d$	r3 GOTO 3
0A3	d$	s7
0A3d7	$	r8 GOTO 9
0A3C9	$	r2 GOTO 1
0S1	$	acc

E.

STACK	INPUT	ACTION
0	abcdbad$	s2
0a2	bcdbad$	s8
0a2b8	cdbad$	s17
0a2b8c17	dbad$	s22
0a2b8c17d22	bad$	r8 GOTO 20
0a2b8c17C20	bad$	r6 GOTO 16
0a2b8B16	bad$	r5 GOTO 5
0a2B5	bad$	s12
0a2B5b12	ad$	r3 GOTO 3
0A3	ad$	s10
0A3a10	d$	r4 GOTO 3
0A3	d$	s7
0A3d7	$	r8 GOTO 9
0A3C9	$	r2 GOTO 1

0S1 $ acc
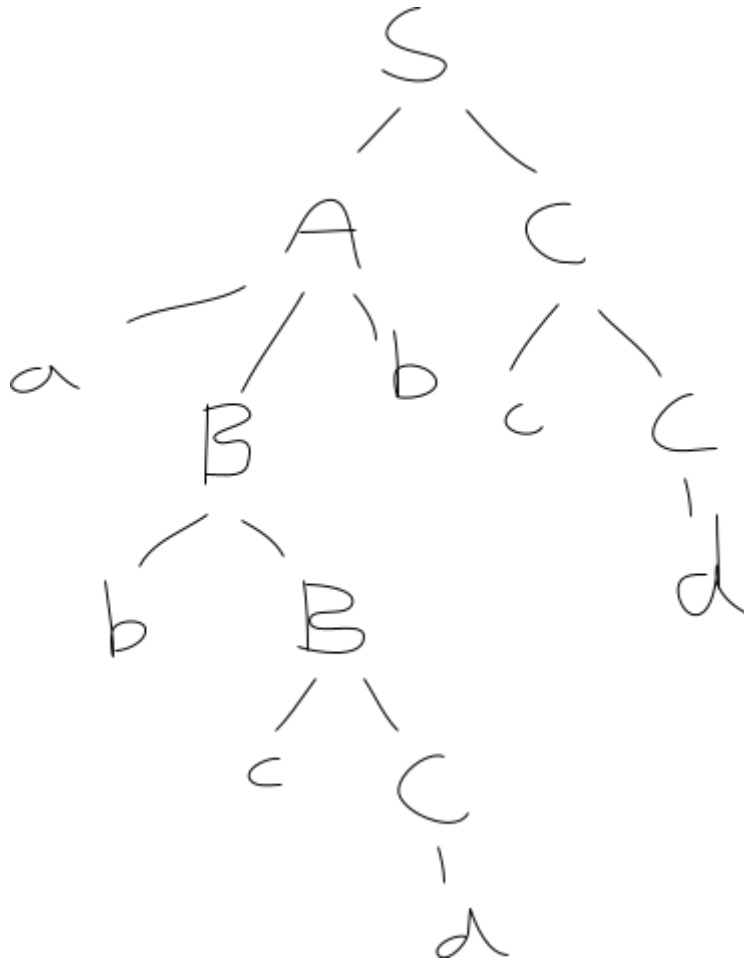

3)

Shortest of B is c d
Shortest of C is d

a. Using a b c d b c d

Right Derivation:
AC
AcC
aBbcd
abBbcd
abcCbcd
abcdbcd
Phrases: [a b c d b c d] [a b c d b] [b c d] [c d] [d] [c d] [d]

Simple Phrases: [d]
Handle: [d]

b. This is not in the language, you would pass a c c into the stack and then after passing in d which is the shortest form of C you would have no more actions

c. This is also not in the language as soon as you pass C which shortest form is d you would get an error and have no more actions

d. There is no conversion needed here but you still get an error after passing a 2 c 6 d 15 you reach an error and have no more actions

e. This is also not in the language after passing in a 2 b 8 in state 8 there is no action for d so it ends there.