**Assessment 2 Answers**

1.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LR Parsing Table | | | | | | | | | |
| State | ACTION | | | | | GOTO | | | |
| a | b | c | d | $ | S | A | B | C |
| 0 | S1 |  |  |  |  |  |  |  |  |
| 1 |  |  | S3 | S4 |  |  |  |  | 2 |
| 2 |  |  |  |  | acc |  |  |  |  |
| 3 |  |  | S3 | S4 |  |  |  |  | 5 |
| 4 |  |  |  |  | R7 |  |  |  |  |
| 5 |  |  |  |  | R6 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

(1)S 🡪 a C

(2)S 🡪 A C

(3)A 🡪 a B b

(4)A 🡪 A a

(5)B 🡪 b B

(6)B 🡪 c C

(7)C 🡪 c C

(8)C 🡪 d

a. abbbccd

STACK INPUT ACTION

0 abbbccd$ s1

b. accd

STACK INPUT ACTION

0 accd$ s1

0a1 ccd$ s3

0a1c3 cd$ s3

0a1c3c3 d$ s4

0a1c3c3d4 $ R7 GOTO 5

0a1c3c3c5 $ R6 GOTO 5

0a1c3c3c5 $ R6 GOTO 5

0a1c3c5 $ R6 GOTO 5

0a1c5 $ R6 GOTO 2

0a1c2 $ acc

c. acdbaacd

STACK INPUT ACTION

0 acdbaacd$ s1

0a1 cdbaacd$ s3

0a1c3 dbaacd$ s4

0a1c3d4 baacd$

d. acdbd

STACK INPUT ACTION

0 acdbd$ s1

0a1 cdbd$ s3

0a1c3 dbd$ s4

0a1c3d4 bd$

e. abcdbad

STACK INPUT ACTION

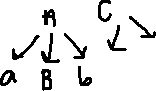
0 abcdbad$ s1

0a1 bcdbad $ ERROR NOT IN SYNTAX

3.

a. abBbcC

Parse Tree:



Right Most Derivation:

S 🡪 AC

🡪 AcC

🡪 aBbcC

🡪abBbcC

Phrases: abBbcC, abBb, cC, bB

Simple phrases: cC, bB

b. accCd

Parse Tree:



Right Most Derivation:

S 🡪 AC

🡪 Ad

🡪 aCd

🡪 acCd

🡪 accCd

Handle: cC

Phrases: accCd, accC, ccC, cC, d

Simple phrases: cC, d

c. aCbaacd

Parse Tree:



Right Most Derivation:

S 🡪 AC

🡪AcC

🡪Acd



🡪 Aacd

🡪 Aaacd

Cannot produce aCb from A, therefore, this string is not in our language

d. acdabd

Parse Tree:



Right Most Derivation:

S 🡪 AC

🡪 Ad



🡪 aBbd

🡪 aAabd

Cannot produce cd from A, therefore, the string is not in our language

e. abCbad

Parse Tree:



Right Most Derivation:

S 🡪 AC

🡪 Ad



🡪 Aad

🡪 aBbad

Cannot produce bC from B, therefore, the string is not in our language