day -3 Egreument 16 15 8 28 16) Write CFG for language given below, i) ret of all strings that start with a 4 ens with 6 one 2= 89,63. ii) get of all things over Z = {a,b} howing 'ag' ii) set of all binary strings that start re ens as a rubshing. with different digits. ALM: To write CFG for given languages. i) Start with a & end with b Procedure: 2-{a,b3. L={ah, aah, abb...3 CFG: S-) aB | b | E (ii) 'aa' de es substring 2 = {a,b} L= {aa, aaa, aab, baa... CFG: S-) xaay | xyaa X-) ax / 6 X/8 y) ay | by 18 (ii) Start & end with different digits 2 = {0,13, l= {01,10,001,110...} S-> 0 A1/186 A > OA lIALE B-) DB | 1 B/2

केन का केन की की कार्य की 1 * 1 / 4 : morbaj (1 CF4 for given language is Result: They sucufully, witten

Experiment 17 (7) Write leftmost & right most deinations & draw passe free for the string. id + id * id from the CF9 E -> Et E/EXE / CFS/id. Ain: To write and & md & draw pane true for the string given below Praedure: E -) EXE =) E+E *E =) id + E * E sid +id * E e) id + id * id E =) 8m E * E =) E *id =) E+E*id s Etid *id
sidtid *id Diagram: Paux fue,

4

enifolding & downits to autorb with organis your him to shind to a production and pro to super symbols from going goom SA (BA CO) tral games. thus, the Ind & rand & pane for given string is water succentuly. Resut!

18)

Eliminate E-productions, unit productions & uncless symbols from gramme S-) A S B/E
A-> a AS /a
B-> SbS /A/bb.

Ain: To estimate &- posoductions, unit posoductions & weles symbols from given grammar.

Brown -

Step 1: Eliminating &- productions
S is nullable
S \rightarrow As B / AB
A \rightarrow aAs | aA | a
B \rightarrow Sbs | sb | b | A | bb.

step : Plininating unit productions.

| unit pairs | Productions |
|------------|----------------------|
| (5,5) | S-) ASB/AB |
| (A, A) | A > a As / a A/a |
| (B,B) | B-3865 Sb b bh |
| (B, A) | B > a A / a A/a |

Final gramas.

S-) ASB/AB A + aAs /aA/a B-) shs /sh /b/bb/aAs/aA/a

hun, the

for gu

3/ep 3: Eliminate useles symbols There are no weless approbals. flim to rome que grammer to one, of the month was 1. The green amount so appears Result: Thus, the E- possibilitions, unit woodubing

E under upstod eliminated succenfully

Someth the given grammar to CNF
So as A losb lalb.

Aim: To convert given grammar to CNF

CNF: A > BC and A=9

Procedure:

7. The given gramma is optimized 2. Androduce the Productions.

A-7 a
B-7 b

3 - Rewrite the gramma S-> AsA) BSB/a/b A-> a B-> b

4. Brak productions

S-) Ap, | Bpz) alb

 $P_1 \rightarrow SA$

P2 -> SB

A > 9

B -> b

1) of minust Result: Thus the given grammas is conveiled to CNF muentally,

| 3 | 1 | | ı |
|---|----|---|---|
| K | 13 | 4 | 1 |

Experiment 20

20) convert the given gramma to CNT ST ABA A-) MA/E B 3 6B/C.

Avin: To conhect given grammay to CNF GNE) A Dax of A-Ja

Brocedine:

1. Eliminate E-production S, A, B are rullable S-) ABA/AB/BA/AA/A/B A-) 9A/b BAB/b

2. Elimionte unit peroductions

| unit pairs | Productions |
|------------|--------------------|
| (5,5) | S-) ABA ABIBALAA |
| (S,A) | s-) uala. |
| (S,B) | 5-> bB/b |
| (A, A) | AraAlb |
| (B,B) | B-) bB/b |

: Just

Final grammas is S-) ABA/BA/AB/AA/AA/A/bB/b. A> aAla B> bB/b. [(A&B) are in Grf) on/ lemma S, Sub AdB posodutions in S S> WABAL OBA | BBA | BA & GAB / aB| $A \rightarrow aAlb$ $B \rightarrow bBlb.$ of explicit goes to destroying that star

Result: Thus the given grammer is conveiled to byest swenfully