Solution Objective Part:

**Part1:**

1. False

NCFL is also subset of itself.

1. False

Let, L1 = Odd palindrome (DCFL), L2= Even Palindrome (DCFL), L1 U L2=> NCFL

1. True

NPDA’s are superset of DPDA’s as DPDA total paths will be part of total NPDA transitions.

1. True

Let L1 = a^n b^n c^m, L2= a^n b^m c^n and their intersection will be a^n b^n c^n which is non- CFL. That means its not closed under intersection. Property, L3 = L1 U L2 is closed. But taking complement on both sides, L3’ = L1’ intersection L2’. Not closed under intersection so not closed under complement too via above property.

1. False

Inherently ambiguous => a^n b^m c^m d^n U a^n b^n c^m d^m where n,m >0

**Part2:**

For all w in total tree of CFL

1. Read w and run over this FA

0 0 0 0 0 0 0

[At input 1 this FA loops at the same state]

1. If w reaches final state accept otherwise reject.

**Pumping Lemma:**

**u = , v = , w=**

**now pumping v, u**