**Assignment**

1. The post system has variables {x, y, z} and signs {N, |, -, =}

The productions are:

Eg.

N

N|

N N||

N| +||=||

-|=| |+||=|||

|||-|=||

1. The post system has variables {x, y, z} and signs {N, |, ·, !, =}

The productions are:

Proof: |||!=||||

N

N|

N||

||·=

||·|=||

|||!=|||

|||!=||||||

1. This post system produces multiples of *x* where *x* = {|,||,|||…}

Eg. *x* = ||| produces ||||||||| (3 \* 3 = 9)

N

N|

N|||

|||·=

|||·|=|||

|||·||=|||||||

|||·|||=|||||||||

|||||||||

6. Given the **MIU** post system

|  |  |  |  |
| --- | --- | --- | --- |
| MU | Begins with M | Ends in U | 2 characters |

|  |  |  |  |
| --- | --- | --- | --- |
| **Production** | **Beginning with** | **Ending with** | **Total characters** |
| 1 | M | I | 2 |
| 2 | M / I / U | U | > 2 |
| 3 | M | M / I / U | > 1 |
| 4 | M / I / U | M / I / U | > 1 |
| 5 | M / I / U | M / I / U | > 0 |

Eg.

|  |  |
| --- | --- |
| MI  MIU  MIUIU | MI  MII  MIIU  MUU |

According to production 2, for a string ending in **I**, a **U** can be appended.

According to production 3, a string occurring after **M** can be doubled.

According to production 4, a string containing **III** can be replaced by a **U.**

According to production 5, a string containing **UU** can be removed.

Rule 3, can double the number of strings and rule 4 can reduce it by 3.

Eg.

MI

M**II**

M**IIII**

MU**I**

This means that the number of **I**’s should be divisible by 3.

But MI cannot be replaced by **MU** since **MI** contains only 1 **I** and 1 is not divisible by 3.

This justifies that **MU** is not derivable in the MIU post system.

9.

|  |
| --- |
| P  FP  P FNP P P P  FP FCNPN FP FP FP P  ThCCPCNPPCCCNPPPCPP ThCPCNPP FP  ThCCCNPPPCPP ThCCNPPP  ThCPP |

X. Consider the following post canonical system:

Eg.

( )

[ ( ) ]

{ [ ( ) ] }