Assignment – 2

Convert the following CFG's into equivalent Chomsky Normal Form (CNF)

1. S → YXZ | Y
   Y → 0Y1 | 01
   X → aXb | ε
   Z → Bz

2. S → ASB
   A → aAS | a | ε
   B → SbS | A | bb

3. S → ASA | aB
   A → B | S
   B → b | ε

4. S → S+S | S-S | (S) | T
   T → x | y | z | X
   X → X*X | X%X | Y
   Y → 0 | 1

5. S → ASB
   A → aAS | a | ε
   B → SbS | A | bb

6. S → aSBcD | BC
   A → AbCd | a
   B → CBA | ε
   C → c | ε
   D → d

7. S → xP | yQ | y | RRz
   P → Qxx | xyR | ε
   Q → yPPy | xy | zR
   R → x | y | PR | ε

8. A → 1 | B | CA | Є
   B → 1BS | 0S0B | ε
   C → x| y |A
   S → 1A1 | 0S | S | A1

9. W → 2XY | 1W | 2Y
   X → 1X3 | 1W3 | ε
   Y → Y11 |12YW3 | X | ε

0.5 bonus for all!