Part B: Number Conversions

a: $34_{(10)} = \chi_{(2)}$

Approach:
Stack = []
$34/2$ = 12 … 0 (Stack = [0])
$12/2$ = 6 … 0 (Stack = [0, 0])
$6/2$ = 3 … 0 (Stack = [0, 0, 0])
$3/2$ = 1 … 1 (Stack = [1, 0, 0, 0])
$1/2$ = 0 … 1 (Stack = [1, 1, 0, 0, 0])

$34_{(10)} = \chi_{(2)}$= Stack = $11000_{(2)}$

b: $5678_{(10)} = \chi_{(2)}$

Approach:
Stack = []
$5678/2$ = 2839 … 0 (Stack = [0])
$2839/2$ = 1419 … 1 (Stack = [1, 0])
$1419/2$ = 709 … 1 (Stack = [1, 1, 0])
$709/2$ = 354 … 1 (Stack = [1, 1, 1, 0])
$354/2$ = 177 … 0 (Stack = [0, 1, 1, 1, 0])
$177/2$ = 88 … 1 (Stack = [1, 0, 1, 1, 1, 0])
$88/2$ = 44 … 0 (Stack = [0, 1, 0, 1, 1, 1, 0])
$44/2$ = 22 … 0 (Stack = [0, 0, 1, 0, 1, 1, 1, 0])
$22/2$ = 11 … 0 (Stack = [0, 0, 0, 1, 0, 1, 1, 1, 0])
$11/2$ = 5 … 1 (Stack = [1, 0, 0, 0, 1, 0, 1, 1, 1, 0])
$5/2$ = 2 … 1 (Stack = [1, 1, 0, 0, 0, 1, 0, 1, 1, 1, 0])
$2/2$ = 1 … 0 (Stack = [0, 1, 1, 0, 0, 0, 1, 0, 1, 1, 1, 0])
$1/2$ = 0 … 1 (Stack = [1, 0, 1, 1, 0, 0, 0, 1, 0, 1, 1, 1, 0])

$5678_{(10)} = \chi_{(2)}$= Stack = $1011000101110_{(2)}$

c: $256_{(10)} = \chi_{(2)}$

Approach:
Stack = []
$256/2$ = 128 … 0 (Stack = [0])
$128/2$ = 64 … 0 (Stack = [0, 0])
$64/2$ = 32 … 0 (Stack = [0, 0, 0])
$32/2$ = 16 … 0 (Stack = [0, 0, 0, 0])
$16/2$ = 8 … 0 (Stack = [0, 0, 0, 0, 0])
$8/2$ = 4 … 0 (Stack = [0, 0, 0, 0, 0, 0])
$4/2$ = 2 … 0 (Stack = [0, 0, 0, 0, 0, 0, 0])
$2/2$ = 1 … 0 (Stack = [0, 0, 0, 0, 0, 0, 0, 0])
$1/2$ = 0 … 1 (Stack = [1, 0, 0, 0, 0, 0, 0, 0, 0])

$256_{(10)} = \chi_{(2)}$= Stack = $100000000_{(2)}$

d: $8_{(10)}$ = $\chi_{(2)}$

Approach:
Stack = []
$8/2$ = 4 … 0 (Stack = [0])
$4/2$ = 2 … 0 (Stack = [0, 0])
$2/2$ = 1 … 0 (Stack = [0, 0, 0])
$1/2$ = 0 … 1 (Stack = [1, 0, 0, 0])

$8_{(10)} = \chi_{(2)}$= Stack = $1000_{(2)}$