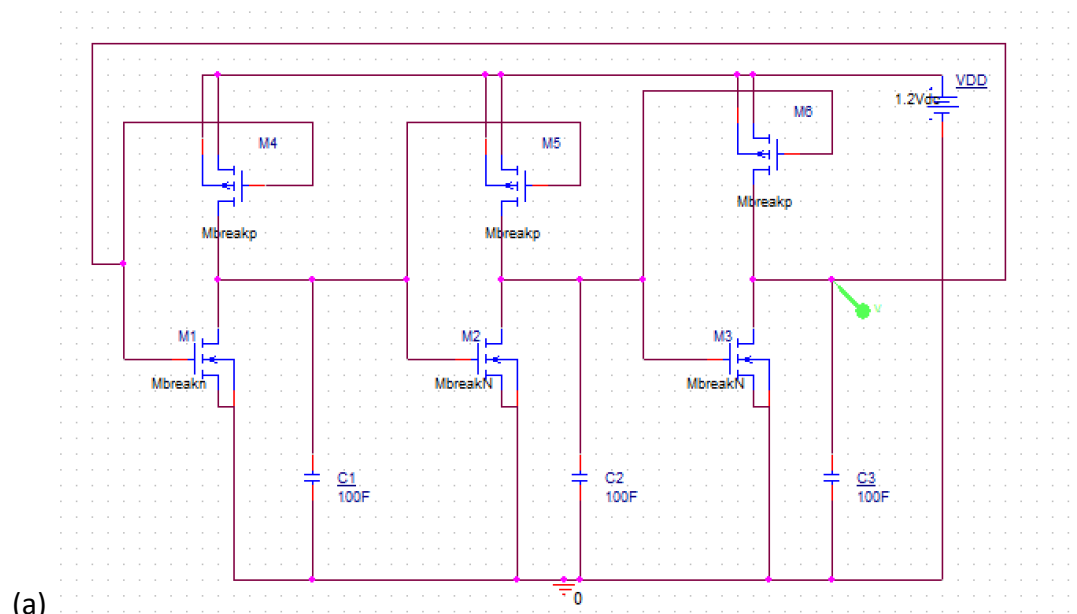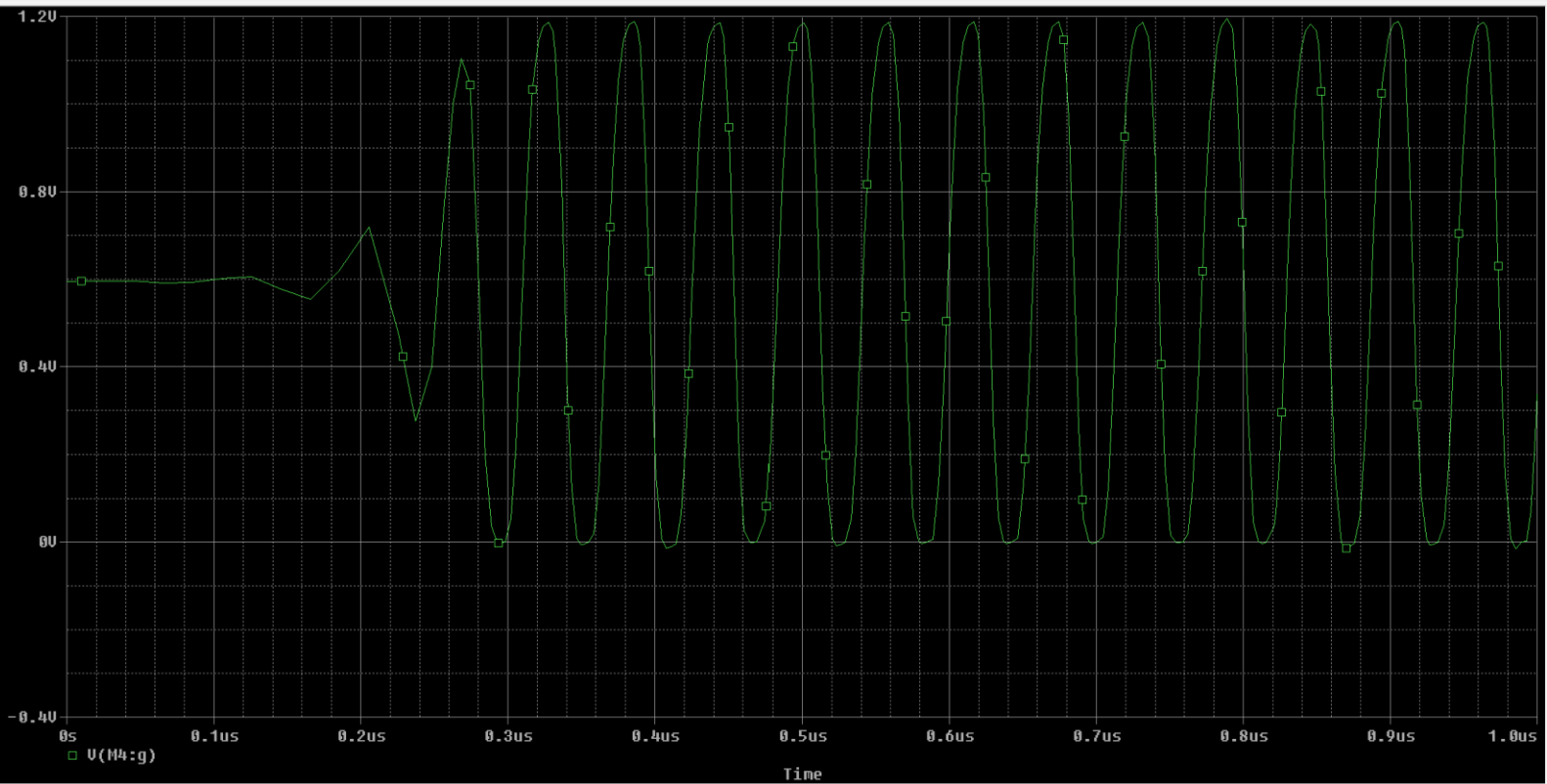# Homework 6 – ECE 1238

Rayan Hassan

(a)

```
.model Mbreakp PMOS (VTO=-0.51 KP=46U W=600n L=720n)
```
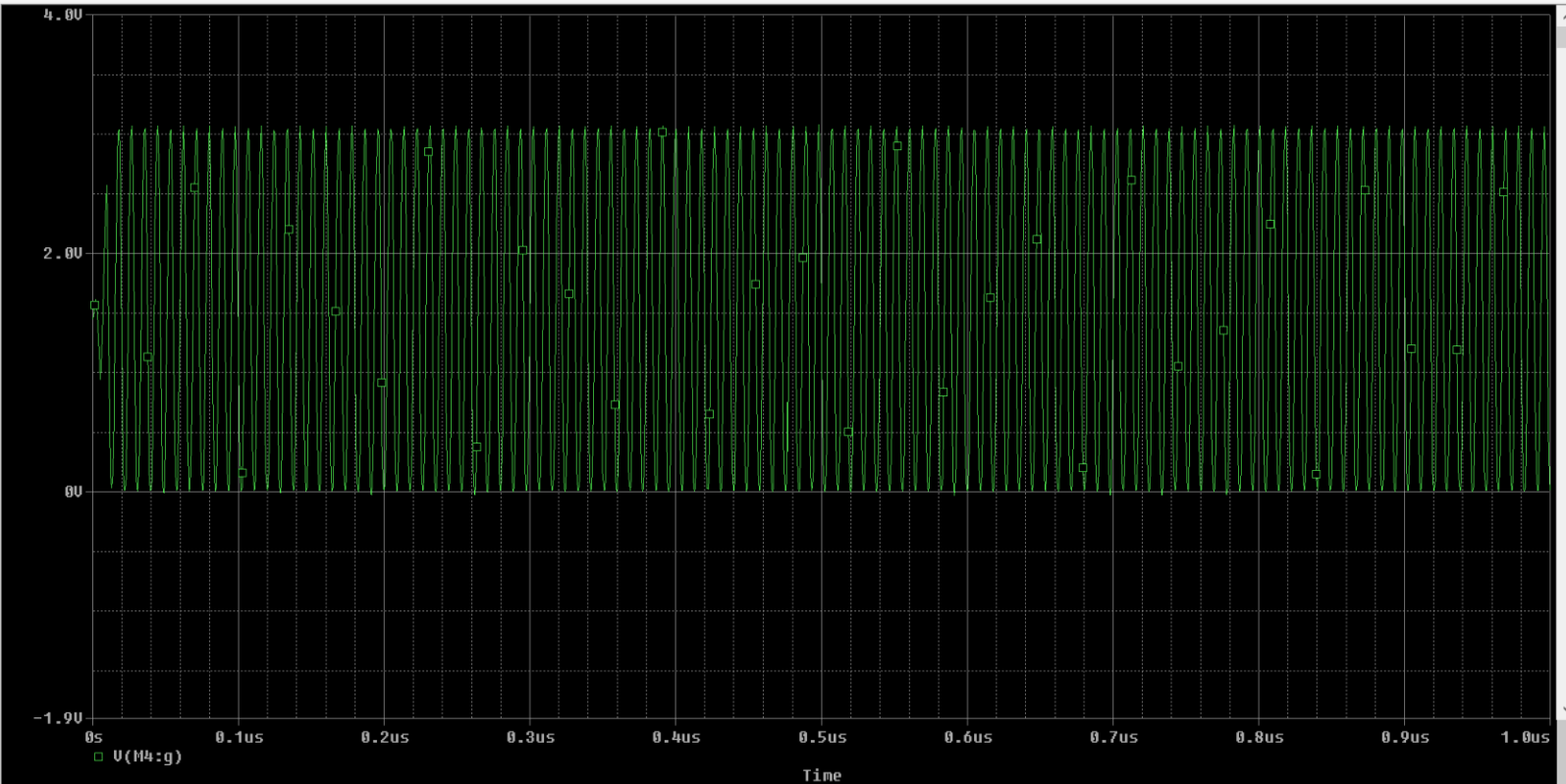
```
.model Mbreakn NMOS (VTO=0.53 KP=98.2U W=600n L=720n)
```

(b) Period1 = X2 – X1 = 0.407u – 0.35u = 0.057 us

(I took values of X at two consecutive peaks using the cursor to find the period)

(C) For VDD = 3.3V

Period2 = 0.342068u – 0.333094 = 0.008974 us

(d) 0.008974 << 0.057, so Period2 << Period1

This means that freq1 = 1/0.057 = 17.54 MHz and freq2 = 1/0.008974 = 111.43 MHz

- ➔ Freq 2 >> Freq1
- ➔ The faster the frequency, the shorter the propagation delay.
- ➔ When we increase VDD, frequency increases, and propagation delay decreases.