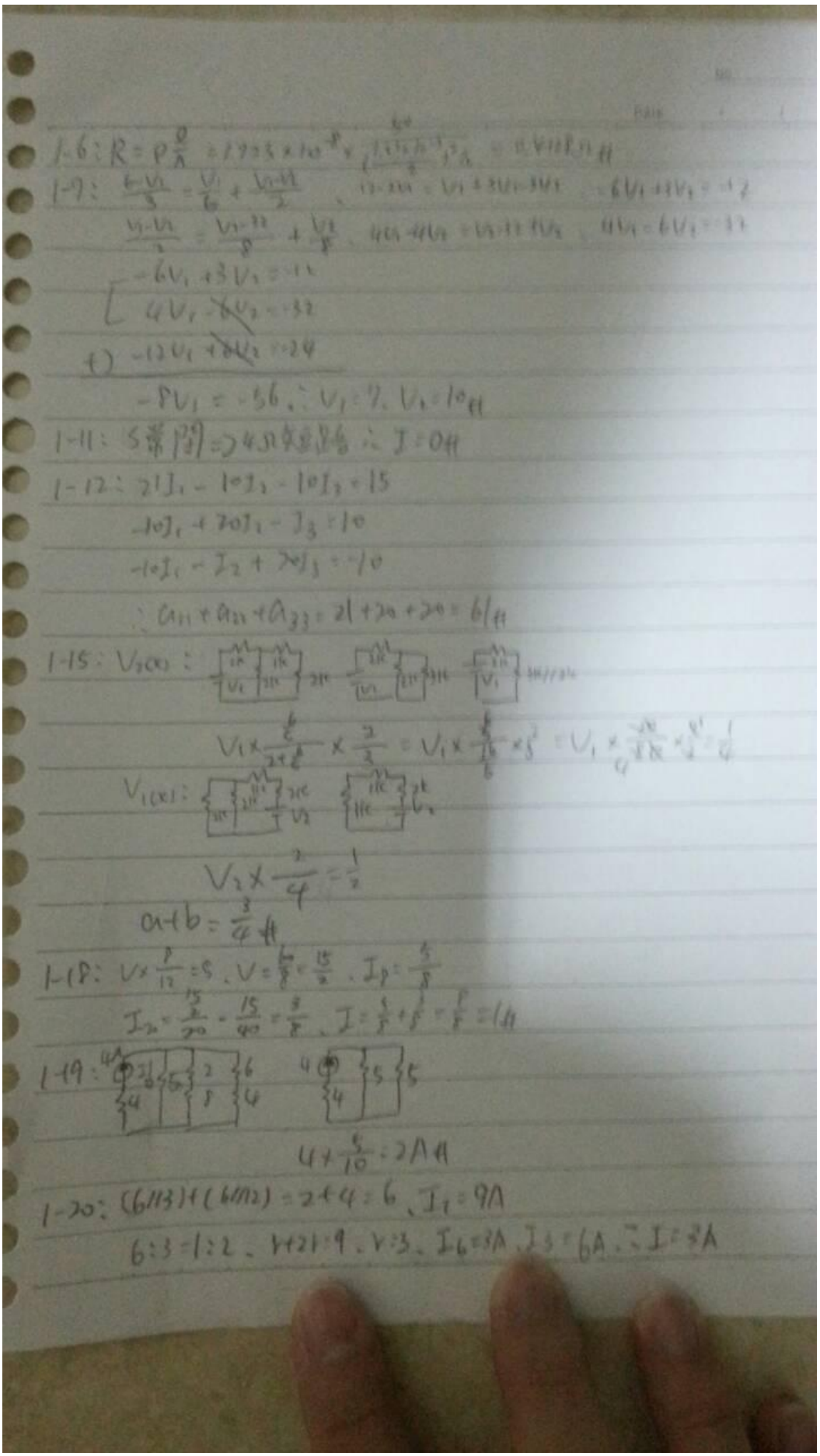
晶片二甲　　**4a237019**　　黃家輝



No.

Date / /

1-22: $75 = \frac{100C_1}{C+Cx} \cdot 115Cx = 25C_1 \cdot Cx = \frac{1}{5}C_1 = 11\mu F$ #

1-23: $Q_T = C_1V_1 + C_2V_2 = (C_1+C_2)V \Rightarrow V = \frac{2\times1+1\times2}{2+1} = \frac{4}{3}$ #

1-27: $\tau = RC = 30\times10^{-6} = 3\times10^{-5}$

$V_c(t) = V_{c0} \times e^{\frac{t}{RC}} = 5\times10^{\frac{-10^5 t}{3}}$

$i(t) = -i_c(t) = -C\frac{dv_c(t)}{dt} = \frac{1\times3}{3}\times10^{-6}\times5e^{\frac{-10^5 t}{3}} = \frac{1}{6}e^{\frac{-10^5 t}{3}}$ #

$V_c(t=3\times10^{-5}) = 5\times e^{\frac{-1\times3\times10^5\times3\times10^{-5}}{3}} = 5\times e^{-1}$ #

1-32: $\tau = RC = [(5\Omega//10)+10]\times10^3\times10^{-6} = 10^{-2}$, $V_c = 0$

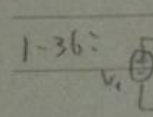
$V_c(t=\infty) = 40\times\frac{10}{15+10} = 16V$

$\Rightarrow V_c(t) = (0-16)e^{\frac{t}{10^{-2}}} + 16 = 16(1-e^{-10^2 t})V$ #

1-35: $Z = R//(-jX_C) = \frac{R\times(-jX_C)}{R-jX_C} = \frac{-j2500}{50-j50} = \frac{2500\angle-90^\circ}{50\sqrt{2}\angle-45^\circ} = \frac{50\angle-45^\circ}{\sqrt{2}}$

$\Rightarrow I = \frac{V}{Z} = \frac{100\sqrt{2}\angle0^\circ}{\frac{50}{\sqrt{2}}\angle-45^\circ} = \frac{100\sqrt{2}\angle0^\circ}{50\sqrt{2}\angle-45^\circ} = 4\angle45^\circ$ #

1-36:



: 低通濾波器 #

$S_p = \frac{\omega_p}{2\pi} = \frac{1}{2\pi RC} = \frac{10^6}{2\pi\times320\times10^3} = 497.3 \approx 500Hz$ #

$dB = -3$ #

3-1: 若以能帶來論, 在0K時導電帶中的能態則是全空而無自由電子.
價電帶則能態被全填滿而無電洞, 故無法導電
若以共價鍵來論, 在0K時所有的價電子均被拘束於價鍵中
而無法得能量躍動, 故不能導電

3-11: 漂移電流是因為電位不均而有電場產生所產生的.
擴散電流則是因為載子濃度不均所造成的

* 霍耳效應, Hall effect 在一半導體材料, 在x軸施加電壓, 產生
一電流I在z軸一磁場B, 所以產生y軸方向一電壓V_H