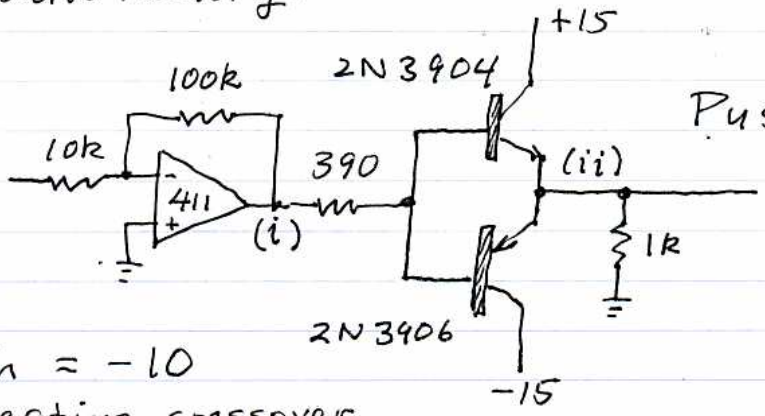
3, continued:

For $f_{3dB} = 20\,kHz$, must choose $C = \frac{1}{2\pi(20kHz)R}$

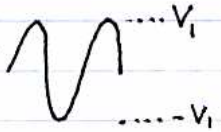
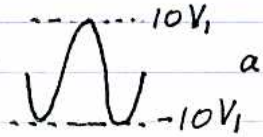
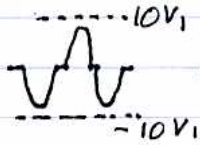
so when $R = 6k$ this means $\boxed{C = 1.33\,nF}$. Any RC pair with $RC = \frac{1}{2\pi(20kHz)} = 7.96\,\mu s$ and $R \le 6k$ will be satisfactory.

4. (a)

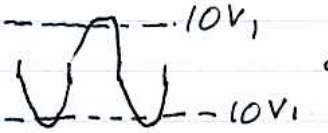
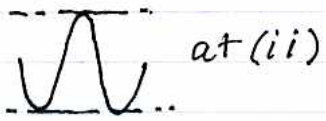


Push-pull buffer (Fig. L8.15, p. 183, lab manual)

Gain = −10 (neglecting crossover output reduction)

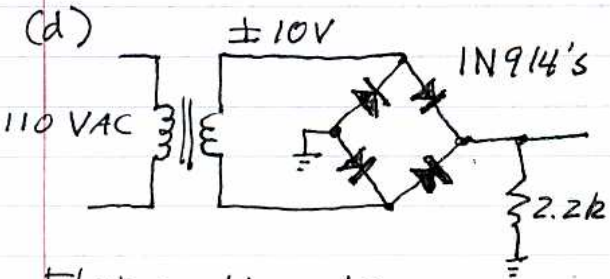
(b) Input  =>  at (i),  at (ii)

(c) With right side of feedback resistor reconnected to push-pull amplifier output, same input now gives

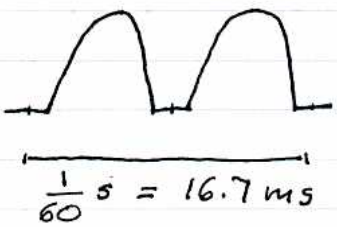
 at (i),  at (ii)

(In (b), (ii), peaks are at $\pm(10V_i - 0.6V)$; in (c), (i), peaks are at $\pm(10V_i + 0.6V)$.)

(d)



60 Hz



Flat portion is when transformer is delivering less than ±1.2 V: $|10V \cdot \sin\omega t| \le 1.2V$

or $|2\pi ft| \le 0.12$ $|t| \le 0.32$ ms around $V = 0$

Hence the flat regions are $2 \times 0.32 = 0.64$ ms long.