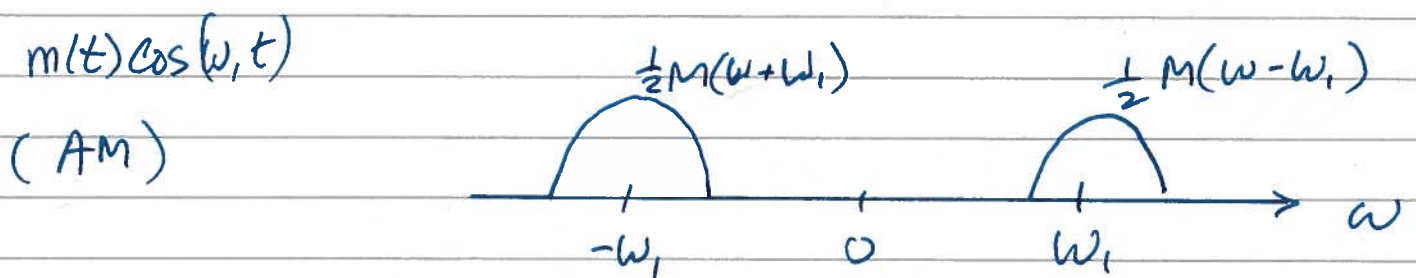
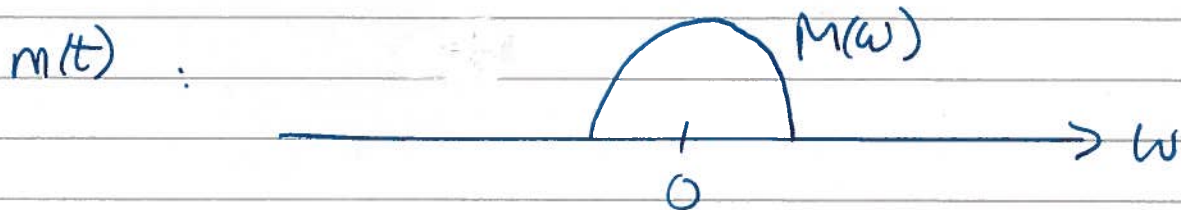


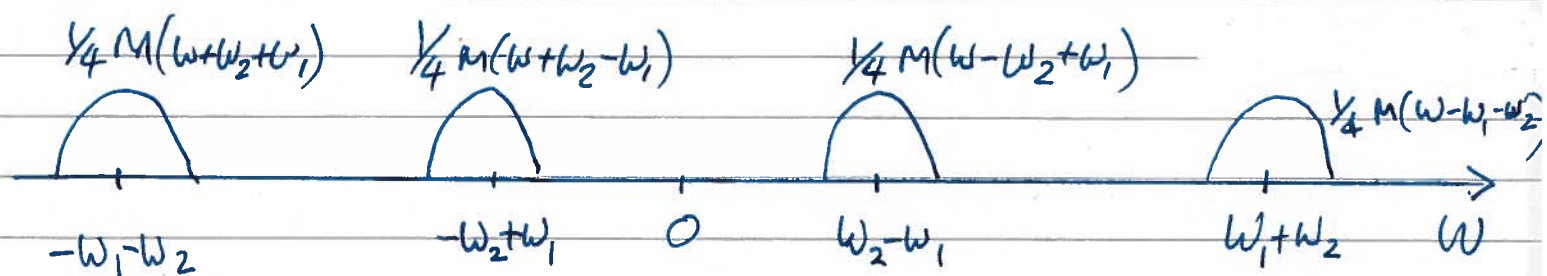
Frequency Converter: to move a signal from one frequency band to another by multiplication with $\cos(\omega_c t)$

AM is a frequency converter



$$m(t)\cos(\omega_1 t) \cdot \cos(\omega_2 t) \quad (\text{say } \omega_2 > \omega_1)$$

$$= \frac{1}{2} m(t) [\cos(\omega_2 - \omega_1)t + \cos(\omega_1 + \omega_2)t]$$



Clearly, multiplying $m(t)\cos(\omega_1 t)$ with $\cos(\omega_2 t)$ shifts the spectrum of the signal as shown above. Depending on preference, appropriate signal frequency band can be obtained by filter.