

Mid Term Exam (Open Book)

Time Allowed: 75 min

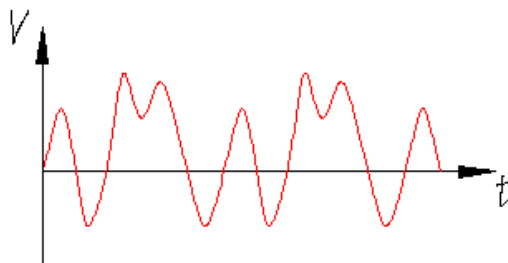
Sample (A)

(1) If you want to design an amplifier, you can use transistor circuits or op-amp circuits, when will you use the transistor and when will you use the op-amp?

(2) For an AM Radio, design the modulator circuit for transmitting the shown audio signal on a 98 KHz channel.

Draw the output waveform.

If it's required to use a 3rd order Butterworth filter in the receiver to select this channel, design such a filter.



Hint:

If you left Q#2 without answer, the marks of Q#1 will be omitted.

Good Luck,
Dr. Ahmad El-Banna

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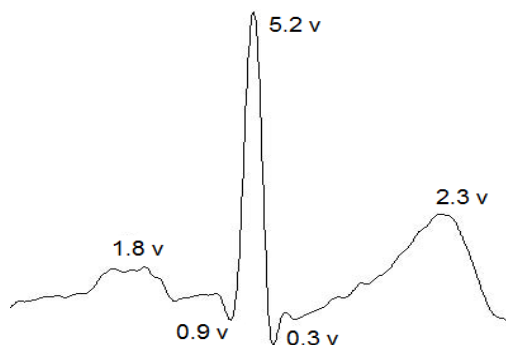
Sample (B)

(1) If you want to design an amplifier, you can use transistor circuits or op-amp circuits, when will you use the transistor and when will you use the op-amp?

(2) Perform a logarithmic signal compression on the shown heart beats signal.

Draw the resulting waveform.

If it's required to forward the resulting waveform to a microcontroller unit through a 2 line bus, design the interface circuit.



Hint:

If you left Q#2 without answer, the marks of Q#1 will be omitted.

Good Luck,
Dr. Ahmad El-Banna