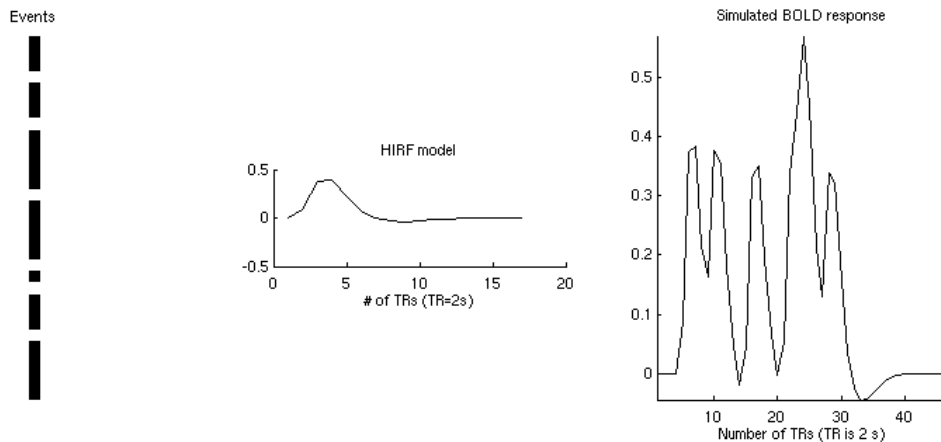**HW7: Answer Key**

1) If you want to capture the entire hemodynamic response to your stimulus, how long should you keep collecting data after you've shown the last stimulus?

Usually about 16 seconds.

Why is the 5th peak in the simulated data so much larger than the others?

The hemodynamic responses to two close events are superimposed on top of each other.

2) About how accurate was your model, i.e., how well did your estimated responses match your stimulated responses?

Any one run could be off by as much as 50% (e.g., estimated response to stimulus 1 was 1.5 and estimated response to stimulus 2 was 1.5, when true answers are 1 and 2), but the mean of about 10 runs is usually spot on.

3) Why are the event-related responses so small?

There are many ways to answer this. Intuitively: each event is very short, so the BOLD response doesn't have much time to ramp up before the stimulus is over. The same idea is communicated by the more quantitative answer: the temporal dynamics of the hemodynamic response mean that only frequencies lower than 0.1 Hz are passed without dramatic attenuation (red dashed line); event-related designs have most of their power at frequencies higher than 0.1 Hz (short stimuli, short inter-stimulus intervals), so most of the power of the neural responses in ER designs is not transmitted in the BOLD response.