Muscle Contraction Physiology

Instructions: As Anatomy and Physiology students make sure to use the appropriate terms when answering the following questions:

1) What specifically triggers $Ca^{2+}$ Voltage gated channels to open in the pre-synaptic terminal of the neuron?

2) Name what immediately follows $Ca^{2+}$ flowing into the pre-synaptic terminal of the neuron.

3) Once the vesicles containing Acetylcholine bind to the pre-synaptic membrane of the neuron, what happens to its contents?

4) What type of gate does the binding of the neurotransmitter Acetylcholine to its specific receptor open? What ion do you think will flow into the sarcoplasm?

5) Upon reaching -65MV what gates open in the sarcolemma? What ion will flow into the sarcoplasm? Will this ion flow in large quantities or not? What effect will the mentioned ion have on the internal charge of the membrane?

6) What ion is stored in the Sarcoplasmic Reticulum?

8) As depolarization moves along the sarcolemma and down into the T-tubules, what effect does it have upon the Sarcoplasmic Reticulum?

9) What is the immediate effect of $Ca^{2+}$ flowing out of the Sarcoplasmic Reticulum?

10) What would happen to the $Ca^{2+}$ Voltage gated channels if the Action Potential did not arrive at the pre-synaptic terminal of a neuron? What would happen to the vesicles containing Acetylcholine at the pre-synaptic terminal of a neuron? What would happen to the Acetylcholine inside the vesicles at the pre-synaptic terminal of a neuron? Would Acetylcholine bind to its Acetylcholine receptors if $Ca^{2+}$ gated channels did NOT open? Why?

11) Will depolarization occur upon reaching 66 mV?

12) What is the difference between ligand gated channels and voltage gated channels.

13) Where is the Post-synaptic membrane?

14) What organ systems are involved in muscle contraction?