1. In a time-driven sequence, each operation continues for a certain amount of ________.

2. In an event-driven sequence, the next operation is triggered by the event that ________ the previous operation.

3. In a single-event driven sequence, a single trigger, such as the closing of a pushbutton switch, advances the sequence to the next _________.

4. What type of sequencer is this? ________________________

5. How many operations are in the sequence? _____

Please study the above sequential controller and answer the questions below.
6. Fill in the timing diagram below for this sequencer. Each horizontal square represents 5 seconds.

7. Fill in the designation number next to the blank relay contacts in the top rung of the ladder so that the cycle will repeat over and over again. _________

8. Which contacts represent the master shutoff for this controller? _________

Please study the sequential controller shown below and answer the questions that follow.

9. What type of sequencer is this? ________________________

10. What does this sequencer do? ____________________________________________
11. How many operations are in the sequence? _____

12. What initially triggers or starts the sequence? __________________________________________

13. Which contacts represent the master shutoff? ___________

14. Fill in the timing diagram below for this sequencer. Each horizontal square represents 10 seconds.

15. Draw below a PLC ladder program for a remote-controlled fan controller. The operator holds a remote control transmitter with two buttons: “up” (contacts 0001) and “down” (contacts 0002). By pressing these buttons the operator can select how many of five available overhead exhaust fans will be on to ventilate a workshop. When a master toggle switch (contacts 0000) is first turned on, the first fan turns on and remains on as long as the master switch is on. After that, the operator can turn on up to four additional fans, one at a time, by pressing the “up” button, and can turn them off one at a time by pressing the “down” button on the remote control unit. When all five fans are on, pressing the “up” button again has no effect, and when only one fan is on, pressing the “down” button has no effect.