Questions for Prorating the assignment marks

1. Design a sequence detector that takes input X and generates output Y using JK flipflops and external gates. The output Y should be high when the sequence 1101 is detected in the input X.
2. Design a UP/DOWN synchronous counter to count according to the sequence: 0->2->4->6->7->0 using SR flip flops and external gates.
3. Design a single digit 8421 BCD subtractor using minimum number of 7483 IC and external gates. Negative difference should be in 10’s complement form.