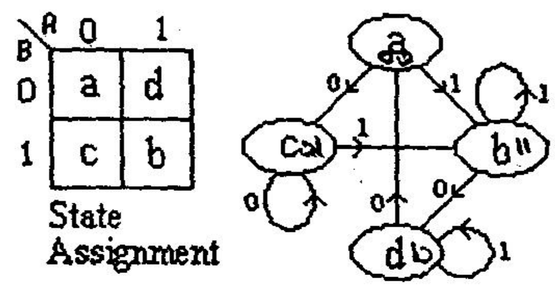
H.U. Spring 2009

Name: ----------

PHY 233
Quiz II

1. The figure shows a flow chart and its state assignment.
The ASM has a single one bit input (x)



   a. Prepare the next state charts (Tables) *(7 pts.)*

   b. Prepare the Karnaugh Maps for D_A and D_B *(7 pts.)*

   c. Convert the D_B map to JK maps *(7 pts.)*

   d. Realized the circuit by Mux implementation *(7 pts.)*

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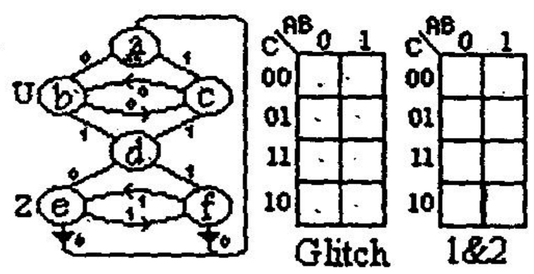
2. a. Make the state assignment in such a way as to avoid output glitches.
Note that states b & e have output *(10 pts.)*



   b. Assume the input is synchronous and repeat the state
Assignment in such a way as to obey Rules 1&2 *(10 pts.)*

   c. Calculate the number of distinct state assignments *(5 pts.)*

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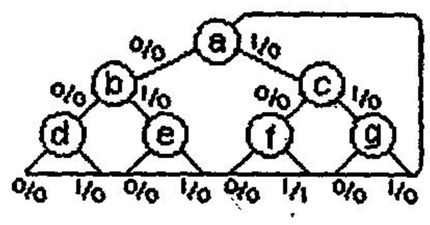
3. For the loose state transition diagram shown



   a. Reduce the number of states by the *method of grouping* *(12 pts.)*

   b. Draw the reduced state transition diagram, and identify the
"hopeful/hopeless" paths in it *(3 pts.)*

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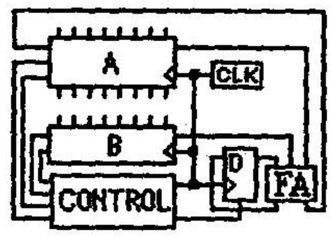
4. a. Identify the computation performed by the circuit. *(4 pts.)*



   b. Redraw on a larger scale and label all the wires other than clock *(8 pts.)*

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5. Answer 3 of the following 4 questions. *(3x5 = 15 pts.)*
Note: The 4th answer will be ignored.

   a. Is there an advantage to implement the ASM of Q1 by the "One Hot" method? Explain.

   b. When is the Go-No go configuration used?

   c. In which situations will the Implication chart method fail to minimize?

   d. When is the "Handshake" configuration used?

Good Luck!

28 + 25+ 15 + 12 + 15 = 100