SUNY-Binghamton **Name** _____
Fall 2025 Economics 450 Hanes
Monetary Economics Second midterm
Total points on exam: 160. Good luck! *Look over the entire exam before you begin.*

1) 10 prs. There are $100 million in deposits (checking accounts and savings accounts) at the Oxford National Bank. The bank has borrowed $50 million by issuing short-term bonds. The bank has purchased $100 million in long-term Treasury bonds, and made $80 million worth of loans to local businesses. It also holds $10 million in cash.

a) What is the bank's capital? $_____

b) How much does the bank hold in "secondary reserves"? $_____

2) 10 pts. What is the business of "investment banking"?

3) 10 pts. What is a "credit-default swap"?

4) cont.

b) 10 pts. Suppose there is an increase in the cost of feeding cats. How does this affect the interest rate in this economy - increase, decrease or no effect - assuming there is no change in the price level or the number of cats in the economy? Explain your answer *with reference to your answer to part a).* And *illustrate with a graph.* In the graph, use i_1 to denote the interest rate prevailing before the cost increase, and i_2 to denote the interest rate after (if it is different).

5) 10 pts. Describe *two* ways that there can be "contagion" between financial intermediaries in a financial crisis.

4) Consider an economy with no banks and no central bank. A person faces a situation similar to that described by the standard Baumol-Tobin model and, for simplicity, the price level is equal to *one*. Thus:

Y is annual income, received at the beginning of the year

i is the annual interest rate or bond yield (expressed as a fraction)

N is the number of financial transactions the person engages in.

F is the time-and-trouble cost of each transaction.

$M^D = \frac{Y}{2N}$ is the average money balance if the person engages in N financial transactions.

However, the thing people use as money is *cats*. One cat is one unit of money M. Cats must be fed. (Dead cats are not acceptable as money.) The annual cost of feeding one cat is z. Thus, over the course of a year, if a person holds an average money balance equal to M, the annual cost of feeding those cats is zM.

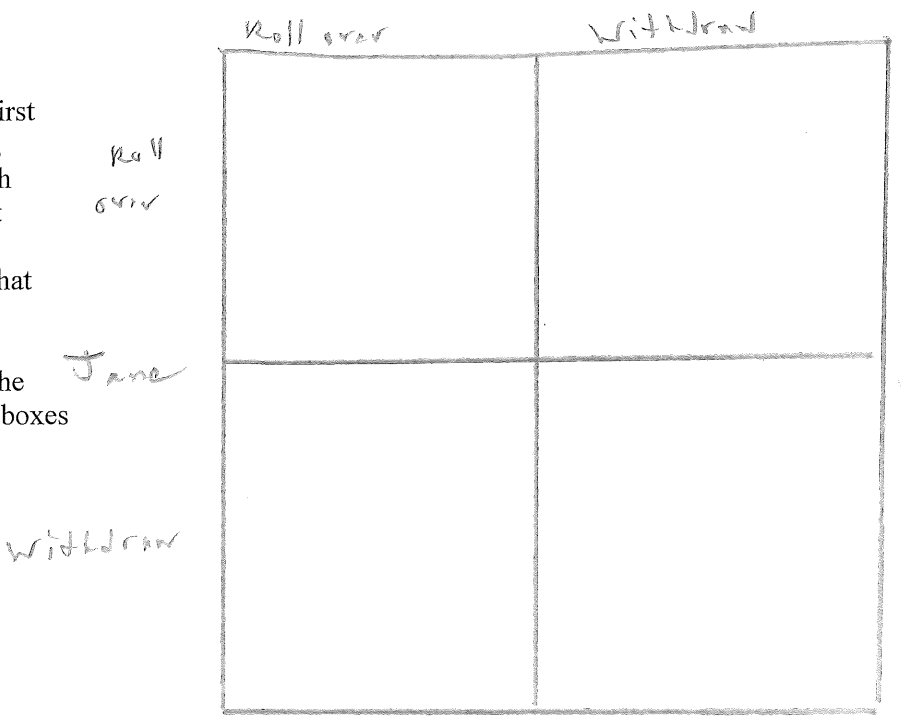
a) 30 pts. Derive the average real money balance that a person will choose to hold.

6) 10 pts. In the context of central banking, what is "stigma"?

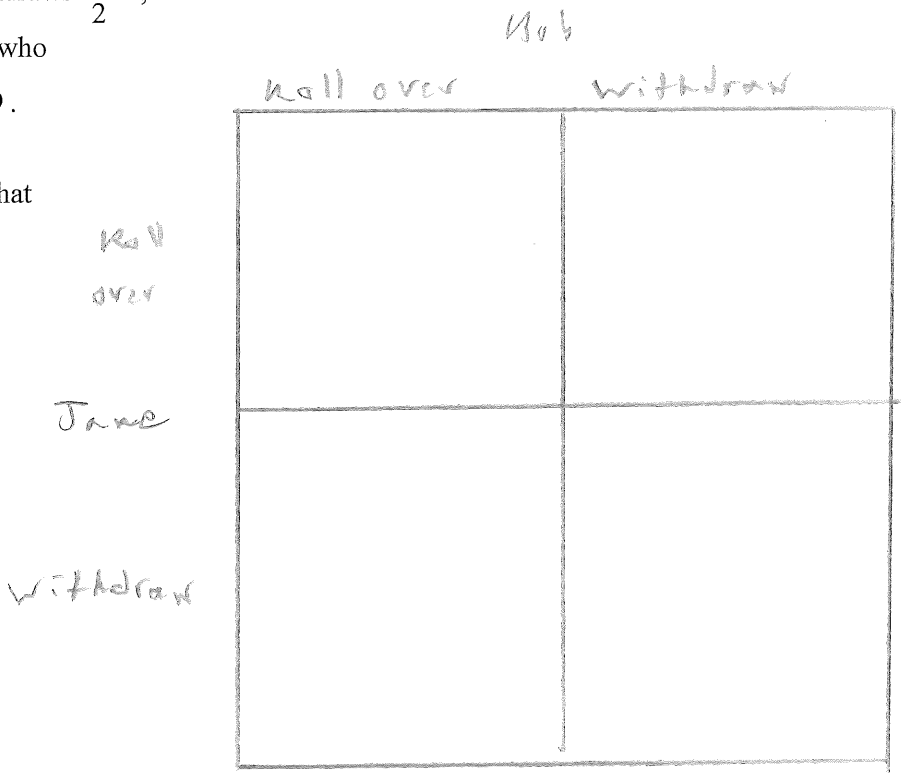
7) 10 pts. In the context of financial regulation, what is a "living will"?

8) A bank has been borrowing money overnight from two people, Jane and Bob, and using the borrowed funds to make loans. Jane and Bob have each lent $\$D$.

a) 15 pts. If Jane and Bob both roll over their loans (continue lending) tomorrow, each will be paid $(1+i)D$. If either Jane or Bob or both does not roll over the loan, the bank will not have enough money to pay both of them what they are owed. If Jane withdraws and Bob rolls over, Jane will get her $\$D$ back and Bob will get nothing, and vice-versa. If both Jane and Bob withdraw, the first one to get to the bank will be paid D; the other one gets nothing. Thus, both will run to the bank in a wild attempt to get there first. Jane is a faster runner than Bob is. The probability that she will get to the bank first is 9/10. The probability Bob will get there first is 1/10. Depict this situation in the "boxes" to the right. Circle all of the boxes that are an equilibrium.



b) 15 pts. Now suppose that the situation is different. As in a), if both Jane and Bob roll over, each will be paid $(1+i)D$. But now, if both withdraw, the managers of the bank will fall into despair, take all the assets and jump into the Hudson River, with the result that both Jane and Bob will get no money at all - zero. If one withdraws and the other rolls over, the bank managers will pay the one who withdraws $\frac{1}{2}D$, then walk to the home of the peson who rolled over and pay that person $\frac{1}{2}D$. Depict this situation in the "boxes" to the right. Circle all of the boxes that are an equilibrium.



9) 30 pts. Suppose that the owners of a financial intermediary (FI) want to maximize the rate of return on the FI's capital, which is the FI's annual profit divided by the amount of capital they invested in the FI. As in the notes, let C denote the amount of capital the owners invest in the FI, B denote the amount the FI borrows, i^B denote the interest rate the FI pays on its borrowing, and i^A denote the interest rate on the FI's assets. Let R denote the rate of return on the FI's capital. Then, as in the notes,

$$R = \frac{i^A(C+B) - i^B B}{C} = i^A + (i^A - i^B)\frac{B}{C}$$

Now further suppose that the interest rate the FI must pay on its borrowing i^B depends on the ratio of its borrowing to its capital *(B/C)*, because potential lenders to the FI know the FI is more likely to default on its borrowing if its capital is smaller relative to its borrowing. Specifically, $i^B = z\frac{B}{C}$

Suppose that the FI's owners can *choose* the ratio of borrowing to capital *(B/C)* to maximize R. What is the value of *(B/C)* that maximizes R? Hint: treat the ratio *(B/C)* as one variable - you could call it "X" - and use the *calculus trick* to find the optimal value of the ratio *(B/C)*.