Write your name on the cover of the test booklet and nowhere else. Enclose this sheet with the booklet. The Excel file will be handed in via Moodle. Your name will only appear on a page of the file that has nothing else on it. Failure to follow these directions will cost you 1 point. The test has 100 points (to be scaled up to 170 points) and is scheduled to take 50 minutes (but you can take the full 2 hours.) Therefore, expect to spend 1 minute for every 2 points. For example, a 10-point question should take 5 minutes.

1) Do all parts of this question. The points are distributed as described.
A) (6 points) Suppose consumption this year is 30% of this year's income plus 30% of last year's income plus 20% of income two years ago. Investment this year is 20% of this year's GDP. This year's Government spending is 100. This year's exports are 600. This year's imports are 10% of this year's GDP. Write out these equations.
B) (12 points) Use mathematics to derive the equation for this year's GDP as a function of lagged GDP and exogenous variables. Show all work.
C) (8 points) Place the formulas into your Excel file and have it calculate GDP up through year 100 assuming that the past two years' GDPs were both 5000.
D) (6 points) Place the formulas into your Excel file with a new permanent change in government spending in year 0 to 300. Calculate GDP up through year 100. What are the short-run and long-run government spending multipliers? Explain how you reached your conclusion.
E) (8 points) Plot the graph for GDP from Part C. What type of pattern is that? Briefly explain your logic. Make sure your graph starts in year -2.

2) (10 points) For EITHER *housing permits*, OR *average prime rate charged by banks*, determine if it is pro-cyclical, counter-cyclical, or acyclical. Explain your logic. Determine if the same variable is leading, roughly coincident, or lagging. Explain your logic.

3) (10 points) For EITHER *conformity* OR *smoothness*, explain what it means and why a variable needs that to be a good indicator used in forecasting.

4) (12 points) Answer EITHER Part A OR Part B.
A) Table 4 of your supplemental text is entitled **Proportions of Occurrences In Which Trends of Various MAGNITUDES Involved Cyclical Reversals of Business Activity.** Part of the table is recreated below. If housing permits decreased by 5.8% in one month, what would that tell you? Explain your logic.

Decreasing Trends During Cyclical Expansions	*Percentage Decrease Larger Than*							
	0.0	0.3	0.5	1.0	3.0	5.0	10.0	20.0
Housing Permits	0.29	0.33	0.33	0.37	0.48	0.59	0.77	1.00

B) Table 3 of your supplemental text is entitled **Proportions of Occurrences In Which Trends of Various DURATIONS Involved Cyclical Reversals of Business Activity.** Part of the table is recreated below. If the ratio of consumer debt to personal income increased for 6 months during a cyclical contraction, what would that tell you? Explain your logic.

Increasing Trends During Cyclical Contractions	*Months of Duration*							
	1	2	3	4	5	6	7	8
Consumer Debt/Personal Income	0.27	0.39	0.50	0.53	0.56	0.60	0.64	0.64

5) (28 points) Answer EITHER Part A OR Part B.
A) Draw the SRAS/LRAS/AD diagram and the IS/LM/FE diagram for an economy with 10% unemployment rate. Prove that the unemployment rate is 10%. Show how the economy will correct itself. Explain the movement(s) of the curve(s). What happens to GDP, prices, and interest rates?
B) Draw the SRAS/LRAS/AD diagram and the IS/LM/FE diagram for an economy with full employment. Illustrate the short-run effects of an increase in wages. Explain the movement(s) of the curve(s). What happens to GDP, prices, and interest rates?