I. Multiple Choice (60%)

1. When marginal revenue equals price for all levels of output, the firm is operating in a perfectly competitive market.
   a. True   b. False

2. Which of the following statements about perfectly competitive markets is *not* correct?
   a. In the short run, firms can earn economic profits or suffer economic losses.
   b. The market demand curve is downward sloping.
   c. The demand curve facing an individual firm is perfectly elastic.
   d. In the long run, firms can earn economic profits or suffer economic losses.
   e. In the long run, firms can enter or exit the market.

3. In 1985, Alice paid $20,000 for an option to purchase ten acres of land. By paying the $20,000, she bought the right to buy the land for $100,000 in 1992. When she acquired the option in 1985, the land was worth $120,000. In 1992, it is worth $110,000. Should Alice exercise the option and pay $100,000 for the land?
   a. Yes.   b. No.   c. It depends on what the rate of inflation was between 1985 and 1992.   d. It depends on what the rate of interest was.

4. Brittany provides manicures at the only salon in town. Her marginal cost is constant at $5 per client, her fixed cost is $25 per day, and she is able to do 8 manicures per day. On a given day, half of her clients are willing to pay $15 for a manicure; half are willing to pay only $10. If she charges $15 for those willing to pay a higher price and $10 to her other clients, then her maximum daily profit equals
   a. $55   b. $100   c. $60   d. $35   e. $75

5. Which of the following changes would increase the present value of a future payment?
   a. a decrease in the size of the payment
   b. a decrease in the certainty of the payment actually being received
   c. an increase in the amount of time that elapses before receiving the payment
   d. a decrease in the interest rate
   e. none of the above

6. Perfect planting and harvesting weather results in a record high crop of wheat. If wheat growers experience an increase in total sales revenue, then the demand for wheat must be
   a. price-inelastic   b. unitary elastic   c. perfectly inelastic   d. price-elastic   e. perfectly elastic

7. Suppose that entry of new firms into an industry significantly increases the market demand for a key input. If supply of the key input is very price inelastic, then, for each firm in the industry in the long run,
   a. external diseconomies shift its entire ATC curve upward
   b. external economies shift its entire ATC curve downward
   c. external diseconomies move it to the left along its original ATC curve
   d. diseconomies of scale shift its entire ATC curve upward
   e. economies of scale shift its entire ATC curve downward

8. If a non-discriminating monopolist decides to lower its price to sell one more unit of its product, then
   a. total revenue rises by an amount equal to the price
   b. some revenue is lost to the extent that units previously sold at a higher price now sell for a lower price; however, the additional unit sold brings in new revenue
   c. marginal revenue increases when total revenue increases
   d. the net effect on total revenue is typically zero since the price must fall
   e. the net effect on total revenue is typically negative since the price must fall

9. Which of the following is true for a monopolist that does not price discriminate?
   a. P > MR because some revenue is lost from having to lower the price on all units sold
   b. P < MR because the monopolist must lower price to sell more output
   c. P = MR only at the profit-maximizing level of output
   d. P = MR because there are no close substitutes for the good
   e. P = MR because the firm faces a perfectly elastic demand curve

10. A market failure occurs when
    a. a market equilibrium is economically inefficient
    b. a market equilibrium is economically efficient
    c. perfect competition maximizes the sum of consumer and producer surplus
    d. crime is not completely eliminated
    e. involuntary exchanges are not completely eliminated

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11. Suppose that population grows by 2 percent annually. For the standard of living to rise, which of the following must occur?
   a. Nominal GDP must grow by more than 2 percent.
   b. Real GDP must grow by more than 2 percent.
   c. Real GDP per capita must grow by more than 2 percent.
   d. Consumption spending must grow by more than 2 percent.
   e. Private investment spending must grow by more than 2 percent.

12. If the Consumer Price Index (CPI) increases from 100 to 125 and the nominal wage increases from $125 to $300, what is the change in the real wage?
   a. -$175 b. +$300 c. +$125 d. +$115 e. -$175

13. If an economy's consumption spending is $5 trillion, investment is $2 trillion, government spending is $1 trillion, net taxes are $1 trillion and household saving is $2 trillion, total income is
   a. $3 trillion b. $5 trillion c. $7 trillion d. $8 trillion e. $11 trillion

14. If net taxes decrease by $100 billion and the result is an increase in GDP of $300 billion, what is the marginal propensity to consume?
   a. 0.75 b. 3.0 c. 0.66 d. 0.50 e. 0.33

15. Using the following information on a hypothetical economy in equilibrium, calculate total output for 2008.

Consumption Spending	$3.5 trillion
Net Taxes	$2.7 trillion
Household Saving	$2.5 trillion
Investment Spending	$2.2 trillion
Government Purchases	$3.0 trillion

If exports are exactly equal to imports, total output for 2008 is
   a. $5.2 trillion b. $5.7 trillion c. $8.4 trillion d. $8.7 trillion e. $13.9 trillion

16. A debt that rises faster than nominal GDP will impose the following opportunity costs in the future:
   a. A permanently higher tax burden.
   b. A period of inflation.
   c. Reduced government outlays relative to GDP
   d. Higher taxes relative to GDP.
   e. All of the above.

17. If the Fed wishes to increase the interest rate, it can do so by
   a. selling bonds
   b. buying bonds
   c. increasing the money supply
   d. setting a higher prime lending rate
   e. encouraging the public to buy bonds

18. After a negative demand shock, what are the expected long-run adjustments?
   a. Wages rise, price level rises, and output falls back to potential
   b. Wages fall, price level rises, and output falls back to potential
   c. Wages fall, price level falls, and output increases back to potential
   d. Wages fall, price level rises, and output increases back to potential
   e. Wages rise, price level falls, and output increases back to potential

19. Which of the following is a reason why the money demand curve might shift?
   a. an increase in the interest rate
   b. a change in the money supply
   c. open market purchases of bonds by the Federal Reserve
   d. changes in the required reserve ratio
   e. new methods of making payments that replace money

20. When a foreign currency crisis occurs, there is a(n) _____ in the supply of the currency and a(n) _____ in the demand for that currency.
   a. increase; increase
   b. decrease; decrease
   c. increase; decrease
   d. decrease; increase
   e. increase; no change

II. Problem (40%)

1. Richard is a stock market day trader. His utility of wealth function is $U(w) = 4 \left(\frac{w}{1000000} \right)^2$. Richard has seen a recent upward trend in the price of Yahoo stock. He feels that there is a 30% chance the stock will rise from $175 per share to $225. Otherwise, he believes the stock will settle to about $150 per share. Richard's current wealth is $1.75 million. Assume that if Richard purchases the stock, he will use his entire wealth. Given his risk preferences, will Richard buy Yahoo? (10%)

2. Wiz-Bang Games is a new video game maker for the latest game console. As a new game maker, they have not established a reputation of providing quality games. The marginal cost to Wiz-Bang for manufacturing games is: $MC(Q) = 0.05Q$. The market price for low-quality games is $20. The market price for high-quality games is $65. If Wiz-Bang sells their product in the low quality market, calculate their producer surplus. If Wiz-Bang sells their product in the high quality market, calculate their producer surplus. If Wiz-Bang spends $12,500 on marketing and packaging, they will be perceived as a high quality producer of video games. Should Wiz-Bang spend the $12,500 to provide a signal to video game consumers of producing high quality games? (10%)

3. Let the following represent the structure of a large open economy with a fixed exchange rate:
   $C = C_A + 0.6(Y-T)$
   $C_A = 500-5r$
   $T = 1000$
   $(M/P)^D = 0.2Y-10r$
   $M^S/P = 1000$
   $I_P = 1000-20r$
   $G = 1000$
   $NX = 1000-0.1Y-100e$
   (1) Initially let foreign and domestic interest rates be equal so that $r = r^f$ and let the foreign exchange rate $e=2$. Find the IS and LM equations. (3%)
   (2) Show that the share of physical capital in output is 1/3 and the share of human capital in output is 1/6. (Assume that each factor is paid its marginal product) (3%)
   (3) Suppose the balance of payments (BOP) is zero if Y and r satisfy: $r=-101+0.02*Y$. Calculate the new level of equilibrium output, the interest rate, and the money supply after an increase of autonomous consumption by 100. (so that now $C_A = 600-5r$) (4%)

4. Consider an economy characterized by the following production function $Y = AK^{1/3}H^{1/6}N^{1/2}$, where K represents physical capital, H is human capital and N is labor. Assume that the growth rate of labor $n = 0.05$, the depreciation rate $d = 0.05$ (both physical and human capital depreciate at the same rate) and A=1. Investment I is the sum of two components, investment in physical capital I_K and investment in human capital I_H. The fraction of GDP that goes to physical capital investment is $s_K = 0.2$ and the fraction of GDP that goes to human capital investment is $s_H = 0.2$
   (1) Derive an expression for the marginal product of physical capital (MP_K) and the marginal product of human capital (MP_H) (4%)
   (2) Show that the share of physical capital in output is 1/3 and the share of human capital in output is 1/6. (Assume that each factor is paid its marginal product) (3%)
   (3) Convert the production function to a function relating $\frac{Y}{N}$ to both $\frac{K}{N}$ and $\frac{H}{N}$. Write down the equations characterizing the steady state physical capital - labor ratio ($\frac{K}{N}$) and the steady state human capital – labor ratio ($\frac{H}{N}$). (3%)