請勿在本試題紙上作答，否則不予計分

Entrance Examination for Institute of Transportation and Communication Management in 2012

The exam has 20 questions in blank and each question is 5 points. There are 100 points in total.

Question 1. If you have an income of $40 to spend, if commodity 1 costs $4 per unit, and commodity 2 costs $20 per unit, then the equation for your budget line can be written as: _____.

Question 2. Charlie has the utility function $U(x_A, x_B) = x_A x_B$. His indifference curve passing through 32 apples and 8 bananas will also pass through the point where he consumes 4 apples and: _____ bananas.

Question 3. Mike consumes two commodities, x and y; and his utility function is $\min\{x + 2y, y + 2x\}$. He chooses to buy 8 units of good x and 16 units of good y. The price of good y is 0.50. What is his income $I =$ _____?

Question 4. Ernie's wage rate is $10 an hour. He has no earnings other than his labor income. His utility function is $U(C, L) = CR^2$ where C is the amount of money he spends on consumption, and R is the number of hours a day he spends NOT working.
(a) Write an equation that describes Ernie's budget constraint _____.
(b) How many hours does Ernie choose to work per day $W =$ _____?
(c) How much money does he spend on consumption per day $C =$ _____?

Question 5. In the Chinese Professional Baseball League (CPBL), a baseball team (Brother Elephants)' attendance depends on the number of games it wins per season and on the price of its tickets. The demand function it faces is $Q = N(20 - p)$, where Q is the number of tickets (in hundred thousands) sold per year, p is the price per ticket, and N is the fraction of its games that Brother Elephants wins. The team can increase the number of games it wins by hiring better players. If Brother Elephants spends C million dollars on players, it will win $0.7 - 1/C$ of its games. Over the relevant range, the marginal cost of selling an extra ticket is zero.
(a) Write an expression for Brother Elephants' profits as a function of ticket price and expenditure on players _____.
(b) Find the ticket price $p =$ _____ that maximizes revenues.

(c) Find the profit-maximizing expenditure on players $C =$ _____ and the profit-maximizing fraction of the games to win _____.

Question 6. Money demand in an economy in which no interest is paid on money is

$$\frac{M^d}{P} = 500 + 0.2 - 1,000i.$$

(a) Suppose that $P = 100$, GDP Y=1,000, and $i = 0.10$. Find real money demand _____ and velocity _____.
(b) Suppose that the price double from $P = 100$ to $P = 200$. Find nominal money demand _____ and velocity _____.

Question 7. An economy is described by the following equations:
Desired consumption: $C^d = 130 + 0.5(Y - T) - 500r.$
Desired investment: $I^d = 100 - 500r.$
Government purchases: $G = 100.$
Taxes: $T = 100.$
Real money demand: $L = 0.5Y - 1,000r.$
Money supply: $M = 1,320.$
Full-employment output: $\overline{Y} = 500.$

Assume that expected inflation is zero so that money demand depends directly on the real interest rate.
(a) Write the equations for the IS and LM curves _____, and _____. (These equations express the relationship between r and Y when the goods and asset markets, respectively, are in equilibrium.)
(b) Calculate the full-employment values of the real interest rate $r =$ _____, and the price level $P =$ _____.
(c) Suppose that, because of investor optimism about future marginal product of capital, the investment function becomes

$$I^d = 200 - 500r.$$

Assuming that the economy was initially at full employment, what are the new values of consumption in the short run $C =$ _____ and consumption in the long run $C =$ _____?