Answer all questions in the space provided on the exam.
Total of 40 points (and worth 22.5% of final grade).
Read each question carefully, so that you answer the question.

Short Answer (6 points each)

1. Use supply and demand curve analysis to show and explain each of the following features related to the current electricity crisis in California. We distinguish between the wholesale market and the retail market for electricity. Due to regulation in the retail electricity market, retail prices faced by consumers are constant and do not change in reaction to price changes in the wholesale market. Furthermore utilities have to provide as much power as consumers want at this regulated retail price.

(a) Show why small reductions in available supply in the wholesale market for electricity, such as a power plant being closed due to maintenance or bottlenecks in transmission lines for out-of-state electricity can lead to very large changes in the **wholesale** price of electricity.

(b) Show the effect on the equilibrium quantity and price of electricity in the **retail** market if demand changes due to a heat wave.

(c) Show what event in either the wholesale or retail market leads to an electricity blackout.

2. Use indifference curves and budget lines (along with **brief description**) to illustrate each of the following situations.

(a) A voucher scheme for food (such as food stamps) where the consumer chooses to use up all of the voucher on purchasing food, but none of her own money.

(b) A block-pricing system that charges consumers less for units below some baseline and much more for units purchased above the baseline, where the consumer chooses to consume exactly the baseline amount.

(c) A pricing scheme for CD's for which the first five CD's cost $15 each while subsequent CD's cost $5 each, where the consumer is indifferent between consuming few CD's (e.g. two) and many CD's (e.g. fifteen).

3. George's preferences between espressos (good X) and cappuccinos (good Y) can be represented by the family of indifference curves $Y = a/X$, where higher values of the parameter a give higher indifference curves. Consider the particular indifference curve given by $Y = 80/X$. Espressos sell for $2.00 per cup and cappuccinos for $2.50 per cup.

(a) For this indifference curve, obtain the general formula for the marginal rate of substitution of cappuccinos for espressos using calculus methods.

(b) Suppose, given his income, George attains consumer equilibrium on the indifference curve $Y = 80/X$. How many espressos will George consume? **Explain your answer.**

(c) What must George's income be to attain this consumer equilibrium? **Explain your answer.**

4.(a) Suppose that when the price of Pepsi-Cola rises from 40 cents to 60 cents the demand for Pepsi-Cola falls from 23 billion cans to 22 billion cans. Calculate the price elasticity of demand for Pepsi (evaluated at initial prices and quantity).

(b) For what range of values of the price elasticity will a decrease in price lead to an increase in expenditures?

4.(c) Consider the following estimated demand function:

$$x = 100 - 4p_x - 4p_y + 20I$$

where x is the quantity of good x demanded, p_x is the price of good x, p_y is the price of good y, and I is income. Calculate the price elasticity of demand when $p_x = 10$, $p_y = 5$ and $I = 10$.

5. A utility maximizing consumer chooses between consumption of good X and expenditure on all other goods. The price of good X **rises**. Indicate on an appropriate diagram:

(a) the substitution effect of the price increase
(b) the income effect of the price increase, and
(c) state whether for the diagram you have drawn good X is a Giffen or non-Giffen good.

Multiple Choice (2 points each)   Note: You should spend 25% of time on these!

1. Suppose a consumer prefers (A) two hot dogs and one Pepsi to both (B) one hot dog and two Pepsis and (C) no hot dog and three Pepsis. Transitivity definitely fails to hold if

a. one hot dog and two Pepsis are preferred to no hot dog and three Pepsis

b. no hot dog and three Pepsis are preferred to one hot dog and two Pepsis

c. two hot dogs and one Pepsi are preferred to three hot dogs and zero Pepsis

d. none of the above

e. all of a., b. and c.

2. Wendy currently consumes $200 of food per month. The federal government institutes a food voucher program of $200 per month. Compared to this voucher program she would definitely be better off instead receiving $200 per month in cash if

a. food is a normal good

b. food is an inferior good

c. always

d. never

e. some of the time but whether food is normal or inferior is not relevant.

3. Currently Ian gets 5 jollies from a Lego set and 2 jollies from a deck of Pokemon cards. Lego sets cost $10 and a deck of Pokeman cards costs $3. Ian should

a. adjust his current consumption levels and buy more Lego and less Pokemon

b. adjust his current consumption levels and buy less Lego and more Pokemon

c. not adjust his current consumption levels

d. more information is needed

4. Consider consumer choice between consumption of housing, a normal good, and consumption of other goods. When the price of housing increases

a. the income effect is to increase housing and the substitution effect is to increase housing

b. the income effect is to increase housing and the substitution effect is to decrease housing

c. the income effect is to decrease housing and the substitution effect is to increase housing

d. the income effect is to decrease housing and the substitution effect is to decrease housing.

5. The equivalent variation of a price change due to a price subsidy

a. exceeds the cost to the government of providing the subsidy

b. is less than the cost to the government of providing the subsidy

c. could be more or less than the cost to the government of providing the subsidy.