This is the guide for Midterm 1, 2015 Form A.

1) This is the form ID question. For Form A, the answer is A.

2) As smidgets and widgets are complements, they need to be consumed together. As the price of smidgets increases, people demand a lesser amount of smidgets. This causes a leftward shift of the demand curve for widgets. Thus the quantity and price of widgets both fall. The answer is D.

3) If widgets have negative income elasticity, then they are inferior goods. Then if income decreases, the quantity demanded of widgets goes up at each level of price. Thus the demand curve shifts to the right. This would cause both the price and quantity of widgets to go up. The answer is A.

4) If there is a technological change that increases labor productivity, then suppliers can produce widgets at lower costs. This implies the supply curve for widgets moves rightwards. This would cause the quantity of widgets to go up and its price to go down. The answer is C.

5) The increase in price of smidgets causes both the quantity and price of widgets both fall. The increase in labor productivity would cause the quantity of widgets to go up and its price to go down. Combining the two, prices will go down, but the effect on quantity would be ambiguous. The answer is D.

6) Since there is no change in quantity, either supply or demand will be perfectly inelastic or both. It cannot be both, however, since price increased. Income is one of the shifters of demand curve so the demand curve must have shifted. Price will increase when the demand curve shifts to the right which means quantity demanded goes up when income increases. This fits into the definition of normal goods. The answer is E.

7) Recall three principles of efficient allocations.

P1. Efficient consumption. Consumers with high reservation values should consume first.

P2. Efficient production: producers with lowest costs should produce and sell first.

P3. Efficient quantity: marginal reservation value of the last buyer should be equal to marginal cost of last seller.

First realize this allocation violates Principle 1: efficient consumption. In this allocation, D1 and D2 who have higher reservation price than D3-D7 don't get to consume. Thus, it is not Pareto Efficient. a) cannot be correct answer since D2 will be worse off by paying

$8.50 to S10 since D2 values a widget at $8.00 – he will be worse off by $0.50. b) is not correct since we do have socially efficient level of quantity of 5. c) is correct - D4 is better off by $1.00 by giving his widget to D2, which he values at $6.00 and receiving $7.00 from D2. D2 is also better off by $1.00 since he values a widget at $8.00 and only pays $7.00 to D4. d) is not correct since D1 will be worse off by paying $9.50 for a widget which he values at $9.00. The answer is C.

8) This allocation violates Principle 3 : efficient quantity. Efficient quantity is 5 - marginal reservation value of the last buyer(D5) is equal to marginal cost of last seller(S5). This rules out a) and b). a) would result in even higher quantity then the initial allocation and b) is not correct since we have the quantity above the socially efficient level. c) is not correct since Principle 2 says S5 should produce and sell before S10. d) is also not correct since we are letting 7 widgets consumed by 7 consumers with highest reservation values. e) is correct answer since S7 is better off by $2.00 (don't have to incur $7.00 of cost) and D7 is also better off by $2.00 (instead of consuming a widget which he values at $3.00, he gets $5.00). The answer is E.

9) When there is a price floor that is above the equilibrium price, we have a binding price floor. A binding price floor will cause the quantity supplied to be higher than the quantity demanded in this market. In other words, there are more suppliers (S1-S7) who want to sell than there are buyers (D1-D3) who want to buy. We know that the quantity in the market will be 3, since at a price of $7, only 3 people would want to buy. Those three people will be D1, D2 and D3 who values a widget at the highest. Also, out of the 7 producers, only 3 will be selling widgets in this market. Because no rule for rationing is given, we don't know which three of the seven suppliers will be selling widgets in this market. The answer is D.

10) Pareto efficiency implies that the total surplus is maximized. Efficiency has nothing to do with distribution, equity, or fairness. The statement is false. The answer is B.

11) Two assumptions are required for the free market to be Pareto efficient, no externalities and perfect competition. When these don't hold, the quantity produced on the free market will not be the point at which the social marginal cost equals social marginal benefit. The answer is C.

12) To "clear the market," the quantity supplied and quantity demanded must be the same. This would happen at a price of 7. The answer is B.

13) Hagrid, Snape, Bellatrix, and Draco all bid less than or equal to the market clearing price of 7. That means they are the only sellers that agree to sell at or below the clearing price of 7. The answer is E.

14) With a tax of $8, then the wedge has a distance of 8 between supply and demand on the left hand side of the free market equilibrium. Then the wedge is placed at Q=1 (Supply Price = 1, Demand Price = 9). Then the total tax revenue is the quantity consumed (1) times the amount of the tax ($8). Thus, the total tax revenue is $8. The answer is A.

15) With a subsidy, the wedge is placed to the right of the free market equilibrium. To get a distance of 2 (the subsidy per taxi ride) we get Q=6 (since Supply Price = 6 and Demand Price = 4). Thus, quantity consumed in the market is 6 and Supply Price is 6. Then we must solve for the area of the triangle (above Supply and beneath Supply Price). This gives us (6*6)/2=18. The answer is A.

16) Notice that a price ceiling of $2 is binding (since it is below free market price of $5). With this binding price ceiling, we have a Q=2. Then we can find PS = (2*2)/2 = 2 (triangle above supply but below the price ceiling). Then if rationing is perfectly inefficient, the consumers with the lowest marginal valuation (that is still above the price ceiling). That gives us CS = (2*2)/2 = 2. Then CS+PS=2+2=4. The answer is C.

17) The quota is set such that the quantity is 2. Then we equilibrium price of a unit of tax is the price between Supply Price at Q=2 (2) and the Demand Price at Q=2 (8). Thus, the answer is 8-2=6. The answer is C.

18) Provided that the relevant case is number 1, when the total amount of quota is 2 a marginal seller has 2 options. The first is to provide taxi services and make a profit of 4, or sell the quota in the quota market. In equilibrium the price of the quota should make indifferent to the marginal seller. Therefore the price of the quota is 4. The answer is B.

19) Without Uber in the market, S1 would need to buy a quota at 6 in order to be able to provide taxi services to get profits of 7. So her surplus is 1. With Uber in the market, S1 would need to buy a quota at 4 in order to be able to provide taxi services to get profits of 5. So her surplus is of 1. Therefore, for S1 makes no difference whether Uber enters or not. The answer is A.
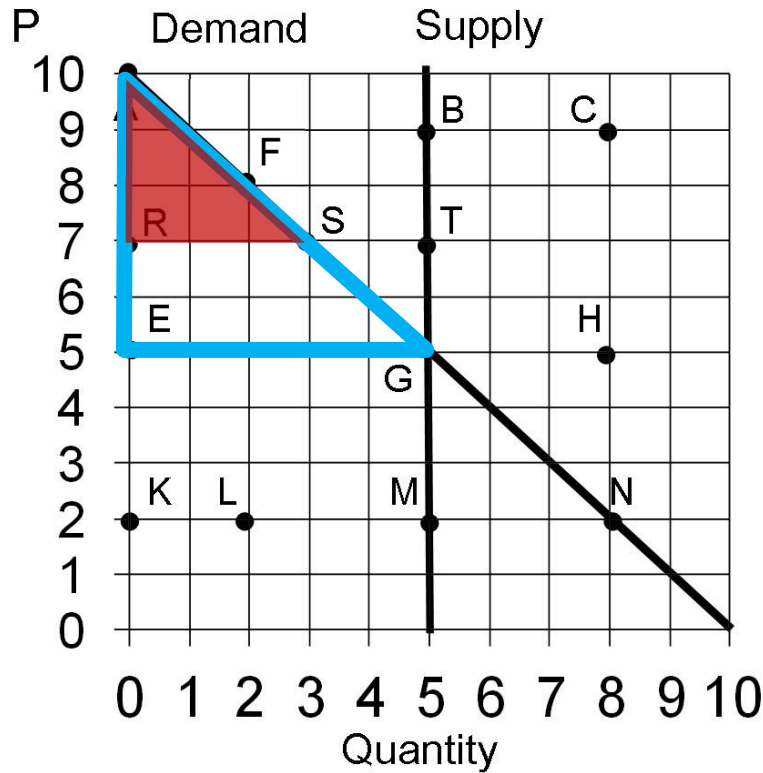
20) By using the elasticity formula we get that the percentage change in price is 2/5 while the percentage in quantity is 2/19, so the elasticity is close to zero, and the demand is inelastic. The answer is B

21) We treat the first scenario as a short-run set up, while the second scenario as the long-run. In the short-run elasticity of demand for gasoline cannot be zero, while the long-run elasticity has to be greater than the short-run elasticity. The answer is D.


22) From the previous question, the estimated elasticity of demand in scenario (i) is 0.2, meaning that the demand for gasoline is inelastic. An inelastic demand means that the quantity demanded does not change as much as the price will change. The gas tax going up by $1 means that the price of gasoline will increase for consumers, and since demand for gasoline is inelastic, the quantity demanded of gasoline will fall by less than the percentage increase in price. Since tax revenue collected can be found by taking price times quantity, this means the tax revenue collected will increase. The answer is A.

23) At $7, demand is 3 units and the supply is 5 units. This means that there will be 2 excess units supplied in the market. If the government has a buyout program to purchase up any excess quantity at a price of $7, this must mean that the 2 units must be purchased at $7. Therefore, the government will spend $14 on the buyout program. The answer is B.

24) The free market consumer surplus is indicated in the graph below by the blue triangle. After the policy is in place, the price of a widget goes up to $7, and so consumer surplus will decrease to the red area. Therefore, the change in consumer surplus from the free market is RSGE. The answer is A.

P — Demand — Supply (y-axis labeled 0–10)

Quantity (x-axis labeled 0 1 2 3 4 5 6 7 8 9 10)

Labeled points on graph: F, S, B, C, R, T, E, H, G, K, L, M, N

25) Producers used to receive $5 for a widget, but now they receive $7. Furthermore, since the government is buying up all the excess widgets, every producer who wants to sell at $7 will get to sell. The producer surplus in the free market is given by the blue square in the diagram below, and the new producer surplus is given by the red-shaded rectangle. Therefore, the change in producer surplus is RTGE. The answer is B.
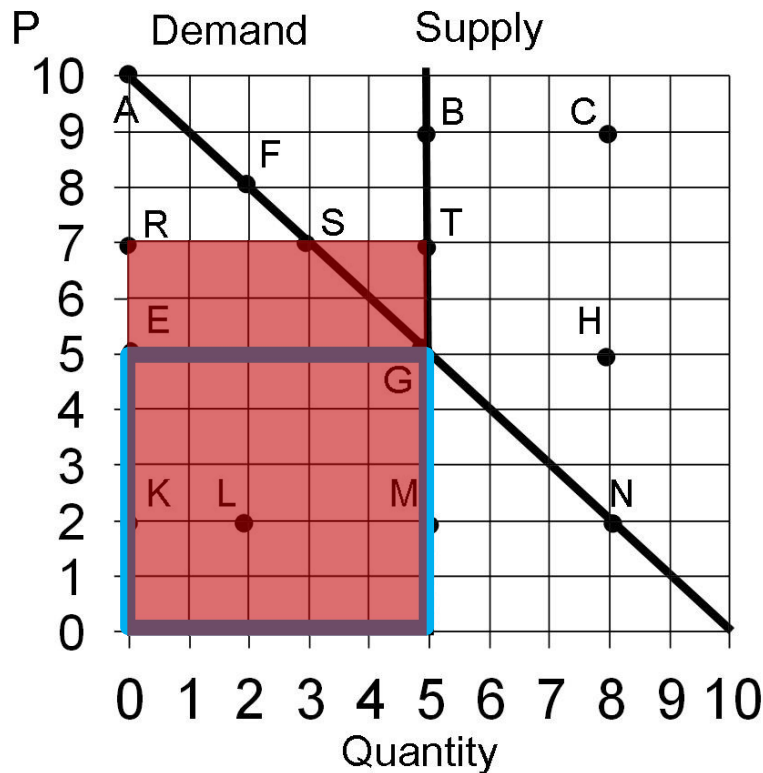
26) If a good is defined as a Luxury good, when income goes up by 1% the quantity of the good goes up by more than 1% (the elasticity of income is greater than one) . Hence, the proportion of income that we spend on that good goes up relative to the original situation. The answer is D.

27) Cap and trade is a mechanism through which the amount of milk sold is reduced relative to the quantity of free market and the price is above the price of free market. A subsidy increases the quantity relative to the free market quantity. Consumers end up paying more in the cap and trade system. Therefore, both statements are false. The answer is D.

28) Since the supply is perfectly elastic, we know that the consumers will bear 100% of the burden of the tax, thus Pd = 16, Ps = 10 otherwise producers will not produce. Since the demand is inelastic consumers will demand always 100 no matter the price, hence Q = 100. The answer is B.

29) The head tax does not distort the marginal valuation of the consumers or the marginal cost of the sellers, thus the market allocation will be the efficient one. Therefore there will be no deadweight loss. The answer is B.

30) If there is a price ceiling in a market, there is excess demand for the good and the allocation of the good is determined by who arrives in the market and pays the "price ceiling" price.. Bidding anything less than $30 means you will not get the good since there are many people willing to pay $30. Therefore it is best to pay $30 as soon as possible. Thus, the answer is C.

31) Recall that for inferior goods, there is an inverse relationship between quantity demanded and income. As income increases, the quantity demanded decreases and vice versa. Therefore, the income elasticity would be negative. For necessity goods such as water, there does not tend to be major changes in quantity demanded regardless of price or income (Ex: Regardless of your situation, you will still consume a set amount of water). Thus an increase or decrease in income will not lead to a substantial change in quantity demanded which means income elasticity is between 0 and 1. Lastly, if income elasticity is greater than 1, a percentage change in income leads to an even greater percentage change in quantity demanded. Thus as income increases, the percentage of your income that you are spending on the good also increases as a result. Thus, the answer is D.

32) When taxes are large, there is a larger wedge in the market which leads to a bigger change in the equilibrium quantity. When we have a larger deviation from the equilibrium quantity, we have a larger deadweight loss. Thus the first statement is false. For the second statement, consider the scenario where demand is perfectly elastic and supply is unit elastic. A tax on suppliers still creates a wedge in the market which reduces quantity exchanged from the equilibrium quantity without taxes. This deviation from the equilibrium quantity results in deadweight loss. Thus, the answer is D.

33) Recall from our reading that the system operator had projected demand for given times. At 3 p.m. there tends to be more usage of energy due to commercial activity and more people being awake than at 3 a.m which means there is a higher projected demand at 3 p.m. than at 3 a.m. Holding the supply of electricity constant, a higher projected demand corresponds to a higher price. Thus, the answer is B.