Part A

Question 1

a) The New York Times (Nov. 30, 1993) reported that ‘the inability of OPEC to agree last week to cut production has sent the oil market into turmoil...[leading to] the lowest price for domestic crude oil since June 1990’.

i. OPEC is the largest cartel in the world. Explain what is meant by a cartel? (2 marks)

ii. Why were the members of OPEC trying to agree to cut production? (3 marks)

iii. Why do you suppose OPEC was unable to agree on cutting production? Why did the oil market go into ‘turmoil’ as a result? (5 marks)

b) i. Discuss the disadvantages of monopoly. (4 marks)

ii. Give an example of a government-related monopoly. Is creating this monopoly necessarily bad public policy? Explain. (6 marks)

ANSWER

a) i. Cartel is when oligopolists cooperate or collude with each other.

ii. OPEC members were trying to reach an agreement to cut production so they could raise the price.

iii. They were unable to agree on cutting production because each country has an incentive to cheat on any agreement. The turmoil is a decline in the price of oil because of increased production.

b) i. Monopoly is considered as a market failure because it prohibits competition. A monopolist produces a quantity of output that is less than the quantity of output that maximizes total surplus because it produces the quantity at which marginal cost equals marginal revenue rather than the quantity at which marginal cost equals price. This leads to high product price. Other disadvantages include exploitation of consumers and restriction of consumers’ choice.

ii. Government-created monopoly comes from the existence of patent and copyright laws. Both allow firms or individuals to be monopolies for extended periods of time—20 years for patents, the life of the author plus 70 years for copyrights. But this monopoly power is good, because without it, no one would write a book or a song and no firm would invest in research and development to invent new products or pharmaceuticals. Government also sometimes own a monopoly corporation for example, TNB in Malaysia. This monopoly is necessary because the capital costs of electricity production is extremely high and this makes a single producer more efficient than a large number of producers.

Question 2

a) What is the difference between the quantity supplied of corn and the supply of corn? What could cause a rise in the quantity supplied of corn, and what could cause a rise in the supply of corn? How would these changes be shown graphically using a supply curve? (5 marks)
b) A person argues that if the prison sentences for all crimes were doubled, this would worsen the problem of overcrowded prisons, all other things being equal. Use the concept of demand to explain why this argument is incorrect. (5 marks)

c) Historically, investors have considered gold commodities to be a good investment to preserve wealth in times of inflation. If investors are no longer worried about inflation and gold demand decreases, what do you expect will happen to gold prices? How would your answer change if you learn that a recent gold mine discovery will increase the supply of gold? (5 marks)

d) Suppose that due to more stringent environmental regulation it becomes more expensive for steel production firms to operate. Also, recent technological advances in plastics has reduced the demand for steel products. Use Supply and Demand analysis to predict how these shocks will affect equilibrium price and quantity of steel. Can we say with certainty that the market price for steel will fall? Why? (5 marks)

ANSWER

a) The quantity supplied of corn is the number of bushels that corn farmers want to sell under the current market conditions, while the supply of corn is a set of price-quantity pairs showing the amounts that farmers wish to sell at various hypothetical prices. According to the law of supply, a rise in the price of corn will cause a rise in the quantity supplied of corn. Non-price factors that positively affect corn growers (such as improved weather conditions, better agricultural technology, and lower costs of fertilizer, seed, labor, and other inputs) would cause a rise in the supply of corn. A rise in quantity supplied is shown by moving up and to the right along the supply curve, and a rise in supply is shown by shifting the supply curve down and to the right.

b) When the prison sentences for all crimes are doubled, the "price" of criminal behavior is higher, and by the law of demand, the amount of criminal behavior will fall. Whether or not the prisons would become more overcrowded depends on whether the "demand" for criminal behavior is relatively flat or steep. If the demand for criminal behavior is relatively flat, then the doubling of prison sentences could sufficiently reduce the amount of criminal behavior so that less total prison time would be served. On the other hand, if the demand for criminal behavior is relatively steep, then the doubling of prison sentences would result in only a minor reduction in criminal behavior, an increase in the total prison time served, and worse overcrowding in prisons.

c) The decrease in gold demand due to reduced fears of inflation will shift the demand curve to the left. This is indicated above by a movement from D0 to D1. The effect on gold prices is negative. If new gold discoveries increase the supply of gold, the supply curve will shift to the right. This effect will also exert downward pressure on gold prices. This effect is diagrammed above as a movement from S0 to S1. Since both effects cause gold prices to become lower, we can say unambiguously that gold prices will decline.
d) The increase in the cost of production of steel will shift the supply curve to the left. This effect alone on the market will influence the market price to rise while the market quantity will fall. This is shown above by a movement from the original supply curve $S_0$ to a new supply curve such as $S_1$. The decrease in demand will cause the demand curve to shift to the left. This effect alone on the market will influence the market price and quantity of steel to fall. Note that the supply and demand effects on price work in opposite directions. If the supply effect dominates the demand effect, the equilibrium prices will rise. This is exhibited by the decrease in demand to $D_1'$. On this demand curve, the net effect is for prices to rise from $P_0$ to $P_1'$. On the other hand if the demand effect dominates, equilibrium prices will rise. This is exhibited by the decrease in demand to $D_1''$. On this demand curve, the net effect is for prices to fall from $P_0$ to $P_1''$. As we don’t know given the current information which effect dominates, we can’t perfectly predict the change in price. The change in quantity is unambiguously decreased.
Part B

Question 1

a) The market demand for TehTarik has been estimated as:

\[ P = 140 - 0.2Q, \]

where \( P \) is price (RM per pack) and \( Q \) is the sales quantity. The market supply is expressed as:

\[ P = 20 + 0.1Q. \]

Determine the equilibrium market output and price for TehTarik. (5 marks)

b) AlikopiSdn. Bhd. produces coffee that is sold in packets. The market for packet coffee is highly competitive, where each packet coffee is selling for RM4 per packet (Q). Alikopi’s total and marginal cost curves are:

\[ TC = 400 + 0.02Q^2 \]
\[ MC = 0.04Q \]

i. Calculate Alikopi’s profit maximizing or loss minimizing quantity. (5 marks)

ii. What is Alikopi’s profit/loss? (4 marks)

iii. Discuss the characteristics of a perfect competition market. (6 marks)

ANSWER

a) Price = 60; Qty = 400

b) i. Qty = 100
   ii. Loss = RM10,000
   iii. There are many buyers and sellers in the market.
   The goods offered by the various sellers are largely the same.
   Firms can freely enter or exit the market.

Question 2

Wombat Bhd. has the following total cost curve

\[ TC = 65400 + 4Q + 0.1Q^2 \]

a) Find the firm’s marginal cost (MC) curve. (3 marks)
b) A monopolist faces the following demand curve, marginal revenue curve, total cost curve and marginal cost curve for its product:

\[ Q = 400 - 2P \]
\[ MR = 200 - Q \]
\[ TC = 4Q \]
\[ MC = 4 \]

i) What is the profit maximizing level of output? (4 marks)

ii) What is the profit maximizing price? (4 marks)

iii) How much profit does the monopolist earn? (4 marks)

iv) Discuss the sources of barriers to entry for a monopolist (5 marks)

**ANSWER**

a) \( MC = 4 + 0.2Q \)

b)

i) \( Q = 196 \)

ii) \( P = 102 \)

iii) Profit = 19,208

iv) Barriers to entry have three sources:

Ownership of a key resource.

The government gives a single firm the exclusive right to produce some good.

Costs of production make a single producer more efficient than a large number of producers.
**Question 3**

AliKopi is a small coffee company that is considering to enter a market dominated by KopiKuat. Each company’s profit depends on whether AliKopi enters and whether KopiKuat sets a high price or a low price.

<table>
<thead>
<tr>
<th></th>
<th>KopiKuat</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High Price</td>
<td>Low Price</td>
</tr>
<tr>
<td>High Price</td>
<td>KopiKuat makes $3m</td>
<td>KopiKuat makes $1m</td>
</tr>
<tr>
<td></td>
<td>AliKopi makes $2m</td>
<td>AliKopi loses $1m</td>
</tr>
<tr>
<td>Low Price</td>
<td>KopiKuat makes $7m</td>
<td>KopiKuat makes $2m</td>
</tr>
<tr>
<td></td>
<td>AliKopi makes zero</td>
<td>AliKopi makes zero</td>
</tr>
</tbody>
</table>

**a)** Does either player in this game have a dominant strategy? (4 marks)

**b)** Does your answer to part a) help you figure out what the other player should do? (3 marks)

**c)** What is the Nash Equilibrium? Is there only one? (5 marks)

**d)** KopiKuat threatens AliKopi by saying “If you enter, we are going to set a low price, so you had better stay out”. Do you think AliKopi should believe the threat? Why or why not? (4 marks)

**e)** If the two firms could collude and agree on how to split the total profits, what outcome would they pick? (4 marks)

**ANSWER**

**a)** If AliKopi enters, KopiKuat would want to maintain a high price. If AliKopi does not enter, KopiKuat would want to maintain a high price. Thus, KopiKuat has a dominant strategy of maintaining a high price. If KopiKuat maintains a high price, AliKopi would enter. If KopiKuat maintains a low price, AliKopi would not enter. AliKopi does not have a dominant strategy.

**b)** Because KopiKuat has a dominant strategy of maintaining a high price, AliKopi should enter.
c) There is only one Nash equilibrium. KopiKuat will maintain a high price and AliKopi will enter.

d) AliKopi should not believe this threat from KopiKuat because it is not in KopiKuat’s interest to carry out the threat. If AliKopi enters, KopiKuat can set a high price, in which case it makes $3 million, or KopiKuat can set a low price, in which case it makes $1 million. Thus the threat is an empty one, which AliKopi should ignore; AliKopi should enter the market.

e) If the two firms could successfully collude, they would agree that KopiKuat would maintain a high price and AliKopi would remain out of the market. They could then split a profit of $7 million.

Question 4

The following table reports the regression result of a beef demand model.

<table>
<thead>
<tr>
<th>Beef demand model (Dependent variable = Beef Quantity)</th>
<th>Coefficient</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef Price</td>
<td>-0.315</td>
<td>0.056**</td>
</tr>
<tr>
<td>Chicken Price</td>
<td>0.851</td>
<td>0.003***</td>
</tr>
<tr>
<td>Income</td>
<td>0.337</td>
<td>0.044**</td>
</tr>
<tr>
<td>Constant</td>
<td>3.262</td>
<td>0.379*</td>
</tr>
<tr>
<td>N</td>
<td>240</td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.83</td>
<td></td>
</tr>
</tbody>
</table>

***α < 0.01, **α < 0.05, *α < 0.10

a) Calculate the point price elasticity of demand for beef (Beef Price = 25; Chicken Price = 10; Income = 2000). (9 marks)
b) Explain what is meant by R². Comment on the R² of the above regression model. (4 marks)
c) Explain the relationships between all the independent variables and the dependent variable. Do they make sense? (7 marks)

ANSWER

Qb = -0.315Pb + 0.815Pc + 0.337I + 3.262

If Pb=25, Pc=10, I=2000, Qb=678
a) \[ E_b = -0.315(25/678) = -0.011 \]

\[ E_c = 0.851(10/678) = 0.013 \]

\[ E_i = 0.337(2000/678) = 0.994 \]

b) R2 explains how much the variation in the dependent variable is explained by the variations in the independent variables. R2 measures goodness of fit, the higher the R2, the better. This model has a high R2 indication a good model fit.

c) The relationships between the dep and ind variable do makes sense. The negative r/ship between beef price and beef quantity is consistent with the law of demand. We would also expect the price elasticity to be less than 1 i.e. inelastic as beef is a food item. Chicken is a substitute for beef; therefore the coefficient is expected to be positive. The coefficient of income is also as expected; an increase in income will increase the demand for beef.

Question 5
Consider public policy aimed at smoking.

a) The government commissioned a research firm, SuperEconConsulting to conduct a study on the market demand for cigarettes in Malaysia. The firm reported that the price elasticity of demand for cigarettes in Malaysia is 1.5. As an economist, do you have any problem with the finding? Discuss. (4 marks)

b) Another firm PandaiEkonConsulting conducted a similar study and reported that the price elasticity of demand for cigarettes is about 0.4. If a pack of cigarettes costs $2 and the government wants to reduce smoking by 20 percent, by how much should it increase the price? (4 marks)

c) If the government permanently increase the price of cigarettes, will the policy have a larger effect on smoking 1 year from now or 5 years from now? Discuss. (3 marks)

d) PandaiEkonConsulting also found that teenagers have a higher price elasticity than adults. Why might this be true? (3 marks)

e) Outline and discuss the appropriate economic policies that can be implemented to reduce smoking? (6 marks)

ANSWER

a) I would disagree. I would expect the price elasticity of demand for cigarettes to be inelastic i.e. less than 1.

b) With a price elasticity of demand of 0.4, reducing the quantity demanded of cigarettes by 20% requires a 50% increase in price, because 20/50 = 0.4. With the price of cigarettes
currently $2, this would require an increase in the price to $3.33 a pack using the midpoint method (note that ($3.33 - $2)/$2.67 = .50).

c) The policy will have a larger effect five years from now than it does one year from now. The elasticity is larger in the long run, because it may take some time for people to reduce their cigarette usage. The habit of smoking is hard to break in the short run.

d) Because teenagers do not have as much income as adults, they are likely to have a higher price elasticity of demand. Also, adults are more likely to be addicted to cigarettes, making it more difficult to reduce their quantity demanded in response to a higher price.

e) Policies include steep price increase (this also require close monitoring to prevent smuggling etc.), educating the public on the health risks of smoking, prohibiting smoking in public places, outlawing the sales of cigarettes to minors.