PART A
INSTRUCTIONS: 1. THERE ARE FOUR (4) QUESTIONS IN THIS PART.
2. ANSWER ALL QUESTIONS.

Question 1
a. How does the theory of the firm provide an integrated framework for the analysis of managerial decision making across the functional areas of business? Discuss.  
[5 marks]

b. The cost of attending a private college for one year is RM6,000 for tuition, RM2,000 for the room, RM1,500 for meals, and RM500 for books and supplies. The student could also have earned RM15,000 by getting a job instead of going to college and 10 percent interest on expenses he or she incurs at the beginning of the year.

Calculate the explicit, implicit, and the total economic costs of attending college.  
[5 marks]

[TOTAL: 10 MARKS]

Question 2
A firm’s total-revenue and total-cost functions are:

\[
TR = 4Q \\
TC = 0.04Q^3 - 0.9Q^2 + 10Q + 5
\]

i) Determine the best level of output.  
[10 marks]

ii) Determine the total profit of the firm at its best level of output.  
[10 marks]

[TOTAL: 20 MARKS]
Question 3

a. i) State the relationship between the total revenue of a firm and the price elasticity of demand for a price increase along a linear demand curve. [2 marks]

ii) Explain the reason for the relationship that you stated in part (i) above. [3 marks]

b. Agricultural commodities are known to have a price-inelastic demand and to be necessities. How can this information allow you to explain the following:

i) Why the income of farmers drops after a good harvest? [2 marks]

ii) Why the income of farmers drops in relation to the incomes in other sectors of the economy? [3 marks]

[TOTAL: 10 MARKS]

Question 4

Early in 2008, the Rangkaian Pengangkutan Integrasi Deras Sdn Bhd (RapidKL), a company responsible for serving the light rail transit (LRT) needs of a large Eastern city, was faced with rising operating deficits on its system. Also, because of a fiscal austerity program at both the federal and state levels, the hope of receiving additional subsidy support was slim.

The board of directors of RapidKL asked the system manager to explore alternatives to alleviate the financial plight of the system. The first suggestion made by the manager was to institute a major cutback in service. This cutback would result in no service after 7:00 P.M., no service on weekends, and a reduced schedule of service during the midday period Monday through Friday. The board of RapidKL indicated that this alternative was not likely to be politically acceptable and could only be considered as a last resort.
The board suggested that because it had been over five years since the last basic fare increase, a fare increase from the current level of RM1 to a new level of RM1.50 should be considered. Accordingly, the board ordered the manager to conduct a study of the likely impact of this proposed fare hike.

The system manager has collected data on important variables thought to have a significant impact on the demand for rides on RapidKL. These data have been collected over the past 27 years and include the following variables:

i) Price per ride (in cents) — This variable is designated $P$ in Table 1. Price is expected to have a negative impact on the demand for rides on the system.

ii) Population in the metropolitan area serviced by RapidKL— It is expected that this variable has a positive impact on the demand for rides on the system. This variable is designated $T$ in Table 1.

iii) Disposable per capita income — This variable was initially thought to have a positive impact on the demand for rides on RapidKL. This variable is designated $(I)$ in Table 1.

iv) Parking rate per hour in the downtown area (in cents) — This variable is expected to have a positive impact on demand for rides on the RapidKL. It is designated $H$ in Table 1.
Table 1: Data on Transit Ridership

<table>
<thead>
<tr>
<th>Year</th>
<th>Weekly Riders (Y) (x1,000)</th>
<th>Price (P) per Ride (Cents)</th>
<th>Population (T) (x1,000)</th>
<th>Income (I)</th>
<th>Parking Rate (H) (Cents)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>1,200</td>
<td>15</td>
<td>1,800</td>
<td>2,900</td>
<td>50</td>
</tr>
<tr>
<td>1982</td>
<td>1,190</td>
<td>15</td>
<td>1,790</td>
<td>3,100</td>
<td>50</td>
</tr>
<tr>
<td>1983</td>
<td>1,195</td>
<td>15</td>
<td>1,780</td>
<td>3,200</td>
<td>60</td>
</tr>
<tr>
<td>1984</td>
<td>1,110</td>
<td>25</td>
<td>1,778</td>
<td>3,250</td>
<td>60</td>
</tr>
<tr>
<td>1985</td>
<td>1,105</td>
<td>25</td>
<td>1,750</td>
<td>3,275</td>
<td>60</td>
</tr>
<tr>
<td>1986</td>
<td>1,115</td>
<td>25</td>
<td>1,740</td>
<td>3,290</td>
<td>70</td>
</tr>
<tr>
<td>1987</td>
<td>1,130</td>
<td>25</td>
<td>1,725</td>
<td>4,100</td>
<td>75</td>
</tr>
<tr>
<td>1988</td>
<td>1,095</td>
<td>30</td>
<td>1,725</td>
<td>4,300</td>
<td>75</td>
</tr>
<tr>
<td>1989</td>
<td>1,090</td>
<td>30</td>
<td>1,720</td>
<td>4,400</td>
<td>75</td>
</tr>
<tr>
<td>1990</td>
<td>1,087</td>
<td>30</td>
<td>1,705</td>
<td>4,600</td>
<td>80</td>
</tr>
<tr>
<td>1991</td>
<td>1,080</td>
<td>30</td>
<td>1,710</td>
<td>4,815</td>
<td>80</td>
</tr>
<tr>
<td>1992</td>
<td>1,020</td>
<td>40</td>
<td>1,700</td>
<td>5,285</td>
<td>80</td>
</tr>
<tr>
<td>1993</td>
<td>1,010</td>
<td>40</td>
<td>1,695</td>
<td>5,665</td>
<td>85</td>
</tr>
<tr>
<td>1994</td>
<td>1,010</td>
<td>40</td>
<td>1,695</td>
<td>5,800</td>
<td>100</td>
</tr>
<tr>
<td>1995</td>
<td>1,005</td>
<td>40</td>
<td>1,690</td>
<td>5,900</td>
<td>105</td>
</tr>
<tr>
<td>1996</td>
<td>995</td>
<td>40</td>
<td>1,630</td>
<td>5,915</td>
<td>105</td>
</tr>
<tr>
<td>1997</td>
<td>930</td>
<td>75</td>
<td>1,640</td>
<td>6,325</td>
<td>105</td>
</tr>
<tr>
<td>1998</td>
<td>915</td>
<td>75</td>
<td>1,635</td>
<td>6,500</td>
<td>110</td>
</tr>
<tr>
<td>1999</td>
<td>920</td>
<td>75</td>
<td>1,630</td>
<td>6,612</td>
<td>125</td>
</tr>
<tr>
<td>2000</td>
<td>940</td>
<td>75</td>
<td>1,620</td>
<td>6,883</td>
<td>130</td>
</tr>
<tr>
<td>2001</td>
<td>950</td>
<td>75</td>
<td>1,615</td>
<td>7,005</td>
<td>150</td>
</tr>
<tr>
<td>2002</td>
<td>910</td>
<td>100</td>
<td>1,605</td>
<td>7,234</td>
<td>155</td>
</tr>
<tr>
<td>2003</td>
<td>930</td>
<td>100</td>
<td>1,590</td>
<td>7,500</td>
<td>165</td>
</tr>
<tr>
<td>2004</td>
<td>933</td>
<td>100</td>
<td>1,595</td>
<td>7,600</td>
<td>175</td>
</tr>
<tr>
<td>2005</td>
<td>940</td>
<td>100</td>
<td>1,590</td>
<td>7,800</td>
<td>175</td>
</tr>
<tr>
<td>2006</td>
<td>948</td>
<td>100</td>
<td>1,600</td>
<td>8,000</td>
<td>190</td>
</tr>
<tr>
<td>2007</td>
<td>955</td>
<td>100</td>
<td>1,610</td>
<td>8,100</td>
<td>200</td>
</tr>
</tbody>
</table>

The transit manager has decided to perform a multiple regression on the data to determine the impact of the rate increase.

1. What is the dependent variable in this demand study? [2 marks]
2. What are the independent variables? [2 marks]
3. What are the expected signs of the variables thought to affect transit ridership on RapidKL? [4 marks]

4. Using a multiple regression program available on a computer to which you have access, estimate the coefficients of the demand model for the data given in Table 1. Results of the multiple regression is in Table 2 (See page 6). [2 marks]

5. Provide an economic interpretation for each of the coefficients in the regression equation you have computed. [4 marks]

6. What is the value of the coefficient of determination? How would you interpret this result? [4 marks]

7. Calculate the price elasticity using 2007 data. [4 marks]

8. Calculate the income elasticity using 2007 data. [4 marks]

9. If the fare is increased to RM1.50, what is the expected impact on weekly revenues to the transit system if all other variables remain at their 2007 levels? [4 marks]

[TOTAL: 30 MARKS]
### Table 2: Regression Model

#### Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.949(a)</td>
<td>.901</td>
<td>.889</td>
<td>1,663.042</td>
</tr>
</tbody>
</table>

a Predictors: (Constant), Pop, PriceC, Price, Advert, Income

#### ANOVA(b)

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression</td>
<td>1054152792.412</td>
<td>5</td>
<td>210830558.482</td>
<td>76.230</td>
<td>.000(a)</td>
</tr>
<tr>
<td>Residual</td>
<td>116159707.588</td>
<td>42</td>
<td>2765707.324</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1170312500.000</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Predictors: (Constant), Pop, PriceC, Price, Advert, Income
b Dependent Variable: Sales

#### Coefficients(a)

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td>t</td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>-5831.522</td>
<td>5740.516</td>
<td>-1.016</td>
</tr>
<tr>
<td></td>
<td>Price</td>
<td>-32.549</td>
<td>8.031</td>
<td>-4.053</td>
</tr>
<tr>
<td></td>
<td>Advert</td>
<td>214.015</td>
<td>89.104</td>
<td>2.402</td>
</tr>
<tr>
<td></td>
<td>PriceC</td>
<td>37.851</td>
<td>8.150</td>
<td>4.645</td>
</tr>
<tr>
<td></td>
<td>Income</td>
<td>798.723</td>
<td>76.345</td>
<td>10.462</td>
</tr>
<tr>
<td></td>
<td>Pop</td>
<td>.253</td>
<td>.145</td>
<td>1.748</td>
</tr>
</tbody>
</table>

a Dependent Variable: Sales
PART B

INSTRUCTIONS: 1. THERE ARE FOUR (4) QUESTIONS IN THIS PART.

2. ANSWER ONE (1) QUESTION ONLY.

Question 1

a. i) What does the shape of an isoquant show? Why is this very important in managerial economics?

[5 marks]

ii) Does petroleum as an energy source have good substitutes? How is this reflected in the shape of the isoquant for petroleum versus other energy sources? Why was this very important during the energy crisis of the 1970s?

[5 marks]

b. If an estimated Cobb-Douglas production function is $Q = 10K^{0.6}L^{0.8}$,

i) What are the output elasticities of capital and labour? If the firm increases only the quantity of capital or only the quantity of labour used by 10 percent, by how much would output increase?

[5 marks]

ii) What type of returns to scale does this production function indicate? If the firm increases at the same time both the quantity of capital and the quantity of labour used by 10 percent, by how much would output increase?

[5 marks]

c. If the total variable cost curve faced down or increased at a decreasing rate from zero output,

i) What would be the shape of the average variable cost, average total cost, and marginal cost curves? Why?

[6 marks]
ii) What would be the shape of the average fixed cost curve? [2 marks]

iii) What type of production function would have cost curves of the shape indicated in part (i) above? [2 marks]

[TOTAL: 30 MARKS]

Question 2

a. i) Under what condition should a firm continue to produce in the short run if it incurs losses at the best level of output? [5 marks]

ii) Are the normal returns on investment included as part of costs or as part of profits in managerial economics? Why? [5 marks]

b. Under what conditions can we be sure that perfect competition leads to a more efficient use of society’s resources than monopoly? How prevalent are these conditions in the real world? [10 marks]

c. If the market demand and supply functions for pizza in Newtown were:

\[
\begin{align*}
Q_D &= 10,000 - 1,000P \\
Q_S &= -2,000 + 1,000P
\end{align*}
\]

i) Determine algebraically the equilibrium price and quantity of pizza; and [5 marks]

ii) Plot the market demand and supply curves, label the equilibrium point \( E \), and draw the demand curve faced by a single pizza shop in this market on the assumption that the market is perfectly competitive. Show also the marginal revenue of the firm on the figure. [5 marks]

[TOTAL: 30 MARKS]
Question 3

a. i) What is the distinguishing characteristic of oligopoly in relation to other forms of market organisation? What is the significance of this? [6 marks]

ii) In which sector of the Malaysian economy is oligopoly most prevalent? Why? [6 marks]

b. i) Why do we study cartels if they are illegal in Malaysia? [6 marks]

ii) Why are cartels unstable, and why do they often fail? [6 marks]

iii) In what way does OPEC resemble a cartel? How successful is it? [6 marks]

[TOTAL: 30 MARKS]

Question 4

a. i) Why are first-degree and second-degree price discrimination less common than third-degree price discrimination? [5 marks]

ii) Are lower airline fares at midweek an example of third-degree price discrimination? [5 marks]

iii) Under what conditions would it not be useful to charge different prices in different markets (i.e., practice third-degree price discrimination) even if possible? [5 marks]
b. The Saga Food Company produces one type of frozen dinner sold directly to consumers and to restaurants. The demand and marginal revenue functions for Saga’s frozen dinner by consumers (market 1) and restaurants (market 2) are, respectively:

\[ Q_1 = 160 - 10P_1 \quad \text{or} \quad P_1 = 16 - 0.1Q_1 \quad \text{and} \quad MR_1 = 16 - 0.2Q_1 \]
\[ Q_2 = 200 - 20P_2 \quad \text{or} \quad P_2 = 10 - 0.05Q_2 \quad \text{and} \quad MR_2 = 10 - 0.1Q_2 \]

Saga’s total cost function is:
\[ TC = 120 + 4Q \]

Draw a figure showing,

i) the demand, marginal revenue, and marginal cost curves faced by the firm;

[3 marks]

ii) the best level of output of the firm and how the firm should distribute sales in each market in order to maximize total profits with third-degree price discrimination;

[3 marks]

iii) the price and total revenue of the firm in each market with third-degree price discrimination;

[3 marks]

iv) the profit per unit and in total with third-degree price discrimination; and

[3 marks]

v) the output, price, total revenue, and profit per unit and in total in the absence of price discrimination.

[3 marks]

[TOTAL: 30 MARKS]