### QUESTION 1

**Reference:** Chap 1, Section 1.1 pg 2

**Answer:**

a) Managerial economics is an application of economic theory and tools of analysis of decision science to examine how an organization can achieve its objective most efficiently. The application of this principle should result in better managerial decisions such as higher profit and increase in the value of the firm.

(8 marks)

b) i) \[ TC = 2000 + 90Q - 1.5Q^2 + 0.01Q^3 \]

Determine the output level that minimizes marginal cost (MC).

\[
\frac{dMC}{dQ} = 0
\]

\[-3 + 0.06Q = 0 \]

\[Q = 50\]

(8 marks)

ii) \[ \frac{d^2MC}{dQ^2} = 0.06 \text{ (positive), therefore minimizes MC.} \]

(4 marks)

**Marks allocation:**
## QUESTION 2

<table>
<thead>
<tr>
<th>Reference:</th>
<th>Chap 8, Section 8.4 pg 120</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Answer:</strong></td>
<td></td>
</tr>
<tr>
<td>a.</td>
<td></td>
</tr>
</tbody>
</table>
| • No barriers to entry and exit.  
• Types of profit that the firm earns in short run. | (5 marks) |
| b. i.    |                           |
| \[ Q_D - Q_S \]  
\[ 200-2P= 120+2P \]  
\[ P= 20 \] | (2.5 marks) |
| Subs \( p=20 \) into \( Q_D \) or \( Q_S \)  
\[ Q_D = 200-2p \]  
\[ = 200-2(20) \]  
\[ Q = 160 \] | (2.5 marks) |
| ii.      |                           |
| max profit, \( P=? \) |                           |
| Firms operate in perfect competitive market  
\( P=AR=MR=20 \) | (1 mark) |
| \( TC =100 + 4Q −Q^2 + 0.2Q^3 \)  
\( MC= 4-2Q+0.6 Q^2 \) | (2 marks) |
| To max profit, set \( MR=MC \)  
\( MR=MC \)  
\[ 20 = 4-2Q+0.6 Q^2 \]  
\[ Q= 7.09 \] | (2 marks) |
| iii.     |                           |
| \( AVC = TVC /Q \)  
\[ =4Q −Q^2 + 0.2Q^3/Q \]  
\[ =4·Q+0.2·Q^2 \] | (2 marks) |
| \( dAVC = -1 +0.4 \) \( Q=0 \)  
\( dQ \)  
\[ = 2.5 \] | (2 marks) |
| Since \( P \) is greater than \( AVC \), the firm should continue the operation. | (1 mark) |

| Marks allocation: |   |

2
# PART B

## QUESTION 1

<table>
<thead>
<tr>
<th>Reference:</th>
<th>Chap 6, Section 6.2.2 pg 81</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer:</td>
<td></td>
</tr>
<tr>
<td><strong>a)</strong></td>
<td>Law of diminishing returns</td>
</tr>
<tr>
<td></td>
<td>As more and more units of variable input is combined with a given amount of fixed input, after a point, there would be diminishing returns (marginal product) from the variable input. (5 marks)</td>
</tr>
<tr>
<td></td>
<td>Law is applicable only in the short run – existence of fixed input (3 marks)</td>
</tr>
<tr>
<td><strong>b)</strong></td>
<td></td>
</tr>
<tr>
<td>(i)</td>
<td></td>
</tr>
<tr>
<td>[Q = 10.5L + 1.5L^2 - 0.0625L^3]</td>
<td></td>
</tr>
<tr>
<td>[MP_L = 10.5 + 3L - 0.1875L^2]</td>
<td></td>
</tr>
<tr>
<td>[MRP_L = 16(10.5+3L-0.1875L^2)]</td>
<td>(1 mark)</td>
</tr>
<tr>
<td>[= 168 + 48L - 3L^2]</td>
<td>(1 mark)</td>
</tr>
<tr>
<td>[MRP_L = W]</td>
<td></td>
</tr>
<tr>
<td>[168 + 48L - 3L^2 = 60]</td>
<td>(1 mark)</td>
</tr>
<tr>
<td>[-3L^2 + 48L + 108 = 0]</td>
<td></td>
</tr>
<tr>
<td>[-3L + 54] [L + 2] = 0</td>
<td></td>
</tr>
<tr>
<td>[-3L + 54 = 0] or [L + 2 = 0]</td>
<td>(2 marks)</td>
</tr>
<tr>
<td>[L = 18]</td>
<td>[L = -2]</td>
</tr>
<tr>
<td>Answer:</td>
<td>[L = 18] (1 mark)</td>
</tr>
<tr>
<td><strong>ii)</strong></td>
<td></td>
</tr>
<tr>
<td>When [L = 18]</td>
<td></td>
</tr>
<tr>
<td>[Q = 10.5L + 1.5L^2 - 0.0625L^3]</td>
<td></td>
</tr>
<tr>
<td>[= 10.5(18) + 1.5(18)^2 - 0.0625(18)^3]</td>
<td></td>
</tr>
<tr>
<td>[= 189 + 486 - 364.5]</td>
<td></td>
</tr>
</tbody>
</table>
TR = 16(310.5)  
= 4968  

(1.5 marks)

TC= 1000 + 60(18)  
= 2080  

(1.5 marks)

Profit = 4968-2080  
= 2888  

(1.5 marks)

Marks allocation:

[Total: 20 marks]

QUESTION 2

Reference: Chap 4, Section 4.2 pg 45

Answer:

a) Demand curve function:

\[ Qk = 2350 - 50.6P_k + 11.5(55) + 0.38(8000) + 0.02(50000) \]

\[ Qk = 7022.5 - 50.6P_k \]  

(2 marks)

\[ Qk = 7022.5 - 50.6(60) \]

\[ Qk = 3986.5 \]  

(5 marks)

b) Yes, the regression function have strong explanatory power since 

\[ R^2 = 0.956 \] It shows that 95.6% of the changes in dependent variable have been explained by the changes in independent variables.

(5 marks)

c) \[ t\text{- value } P_k; \quad 50.6/15.9 = 3.18 > 1.96 - \text{ Significant} \]

\[ P_c; \quad 11.5/52.8 = 0.22 < 1.96 - \text{ Not Significant} \]
Y; 0.38/0.06 = 6.33 > 1.96 - Significant
Pk; 0.02/0.007 = 2.86 > 1.96 - Significant

(5 marks)

d) Maximise profit; MR = MC

TR = PxQ

TR = (138.78 – 0.0198Q) Q

TR = 138.78Q – 0.0198Q²

MR = dTR/dQ = 138.78 - 0.0396Q

MR = MC

138.78 – 0.0396Q = 28

0.0396Q = 110.78

Q = 2797.5

P = 138.78 - 0.0198 (2797.5)

P = 83.39

(4 marks)

In order to maximize profit price must be at RM 83.39 and not at RM60.00. (1 mark)

Marks allocation:

[Total: 20 marks]

QUESTION 3

Reference: Chap 6, Section 6.4 pg 87

Answer:

a) Q = 3281.89 (3 marks)

b) MP_L = 65.64

MP_K = 196.91 (5 marks)
c) No, because $\frac{MP_L}{w}$ not equal to $\frac{MP_K}{r}$

\[
\frac{2.63}{1.97}
\]

(5 marks)

d) $K = 18.88$

$L = 18.88$

(7 marks)

Marks allocation:

[Total: 20 marks]

QUESTION 4

Reference: Chap 8, Section 8.8 pg 131, Chap 10, Section 10.2 pg 157,

Answer:

a) Market 1: $P = 1.83$

$Q = 3.15$

(5 marks)

Market 2: $P = 2.87$

$Q = 2.09$

(5 marks)

b) $P = 2.05$

(5 marks)

c) First-degree: charging maximum price possible for each unit of output.

Eg. During auction

(2.5 marks)

Second-degree: pricing based on quantities of output purchased by individual consumers (blocks of consumption).

e.g electricity, water

(2.5 marks)

Marks allocation:
### QUESTION 5

<table>
<thead>
<tr>
<th>Reference:</th>
<th>Chap 7, Section 7.1.2 pg 102</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Answer:</strong></td>
<td></td>
</tr>
<tr>
<td>a)</td>
<td></td>
</tr>
<tr>
<td>• Explicit cost is the actual expenditure incurred when running a business.</td>
<td>(2 marks)</td>
</tr>
<tr>
<td>• Implicit cost is the foregone income opportunities when a person decided to set up his/her own business.</td>
<td>(2 marks)</td>
</tr>
<tr>
<td>b)</td>
<td></td>
</tr>
<tr>
<td>i. Explicit cost = RM 10,000+ 25000+6000 =RM 41000</td>
<td>(3 marks)</td>
</tr>
<tr>
<td>ii. Implicit cost = RM 80,000</td>
<td>(3 marks)</td>
</tr>
<tr>
<td>iii. Economic cost = RM 41000+ 80000= RM121000</td>
<td>(3 marks)</td>
</tr>
<tr>
<td>iv. Economic profit = RM 100 000 – (41000+ 80000) = - RM 21000</td>
<td>(3 marks)</td>
</tr>
<tr>
<td>c)</td>
<td></td>
</tr>
<tr>
<td>No. Manuel should working with the consultant’s firm because the economic profit is less than zero.</td>
<td>(4 marks)</td>
</tr>
<tr>
<td><strong>Marks allocation:</strong></td>
<td></td>
</tr>
</tbody>
</table>

[Total: 20 marks]