KOD KURSUS : PM 5023 OPERATIONS & TECHNOLOGY MANAGEMENT
TARIKH : 22 SEPTEMBER 2001 (SABTU)
MASA : 6:00 PTG - 9:00 MLM (3 JAM)
TEMPAT : UUM

INSTRUCTIONS :

* ANSWER ANY FOUR QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS

NO. MATRIK : ____________
NO. KAD PENGENALAN : ____________
NAMA PENSYARAH : HAJI AHMAD BIN HAJI OTHMAN

JANGAN BUKA SOALAN INI SEHINGGA DIBERI ARAHAN
UNIVERSITI UTARA MALAYSIA
MASTER OF BUSINESS ADMINISTRATION
FINAL EXAM - MAY SEMESTER SESSION 2001/2002
PM 5023 – OPERATIONS & TECHNOLOGY MANAGEMENT

DATE: 22 September, 2001 (SATURDAY)
DURATION: Three hours

INSTRUCTION: Answer any FOUR questions. All questions carry equal marks.

QUESTION 1: Answer any 2 parts.

1 (a) Define and describe the process of Operations Management in both the manufacturing and service organizations. Illustrate your answer with a suitable diagram describing the OM system.

1 (b) What do you understand by International Quality Standards or ISO? Describe briefly the purpose and components of ISO 9000 and ISO 14000. Why are these standards important in the manufacturing and service sectors?

1 © List out the common tools for improving quality and performance. Describe the functions of any three of the following by substantiating with appropriate diagrams:

   i. Checklists
   ii. Pareto Chart
   iii. Cause-and-Effect diagram
   iv. Bar Charts
   v. Gantt Chart.

QUESTION 2 - Answer both parts.

2 (a) The Transportation Method is one of the quantitative techniques used in solving multiple facility location problems. Describe the main goals of the method and outline briefly its’ limitations.

2 (b) A food manufacturer in Alor Setar is looking for a suitable location to build a second facility. The search has been narrowed down to four locations, A, B, C and D, of which all are acceptable to management in terms of dominant factors.

Five location factors with their factor weights have been identified together with factor scores for each location. [Factor scores for each location are based on preference rating of]
1 = very poor  
2 = poor  
3 = moderate  
4 = good  
5 = excellent

Detailed information are as in the Table below:-

<table>
<thead>
<tr>
<th>Location factor</th>
<th>Factor weights</th>
<th>Factor score for each location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>1. Labour climate</td>
<td>.25</td>
<td>5</td>
</tr>
<tr>
<td>2. Quality of life</td>
<td>.20</td>
<td>2</td>
</tr>
<tr>
<td>3. Transportation system</td>
<td>.20</td>
<td>3</td>
</tr>
<tr>
<td>4. Proximity to markets</td>
<td>.19</td>
<td>5</td>
</tr>
<tr>
<td>5. Proximity to materials</td>
<td>.16</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>

Using the ‘Total Weighted Scores’ technique, determine the most preferred location for the second facility of the said food manufacturer. What is the second-most preferred location and why?.

**QUESTION 3 - Answer any 2 parts.**

3 (a) What is Statistical Process Control (SPC)? Give some examples of:

(i) The uses of control charts  
(ii) Process changes that can be detected by SPC.

3 (b) Today, one of the most important trends in location patterns is the globalisation of operations. Give the meaning of the term globalisation and identify three hot spots of global economic activity.

3 © Inventory management is important in all types of businesses, comment!. What are the types of inventory commonly used in manufacturing firms?. Briefly describe what you understand by Economic Order Quantity (EOQ) and list out the advantages of EOQ in a manufacturing environment.
QUESTION 4 - Answer both parts

4 (a) Linear programming (LP) is a mathematical modelling technique widely used in planning and decision making on resource allocation. Describe the four properties that are common to all LP programmes.

4 (b) The Pan Sintok Racquet Company produces tennis and badminton rackets for export. The production process for each is similar in that both require a certain number of hours of framing work and a certain number of labour hours in the stringing department.

Each tennis racket takes eight hours of framing work and four hours in the stringing department. Each badminton racket requires six hours of framing work and two hours in the stringing department.

During the current production period, 480 hours of framing work time are available and 200 hours of stringing time are available. Each tennis racket sold yields a profit of RM 25.00 and each badminton racket sold gives a profit of RM 15.00.

(i) Construct the above information in a Tabular format.
(ii) Using a graphical solution to this Linear Programming problem, determine the best combination of tennis and badminton rackets that could be produced by Pan Sintok Racquet Co., in order to reach the maximum profit. (Graph papers are available on request.)
(iii) Calculate the profit generated from the above combination of tennis and badminton rackets.

QUESTION 5 - Answer any 2 parts.

5 (a) What are some of the practical and strategic implications in layout planning ?. Describe briefly the four basic types of layout and give one example of each.

5 (b) What is the main purpose of Supply Chain Management?. Highlight some of the points that Operation Managers use in Supply Chain Management.

5 © List out the three main methods of forecasting and describe briefly the factors involved in designing a forecasting system.
QUESTION 6 - Answer both parts

6 (a) Discuss the importance of PERT & CPM in project management, and outline some of the steps common to both.

6 (b) Ir. Rahman is the Technical Director of Udara Bersih Sdn. Bhd. Which specialises in the control of air pollution. One of the projects that Ir. Rahman is considering for his client, Bernas Bhd. is to install an air pollution control device in one of its high-powered rice dryers.

He has listed a number of activities that must be completed before installing the device. The activities, duration and their immediate predecessors appear in the following table.

Table X – The activities, duration and immediate predecessors for Bernas high-powered rice dryers.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>DESCRIPTION</th>
<th>DURATION (WEEKS)</th>
<th>IMMEDIATE PREDECESSORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Procure relevant components</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>B</td>
<td>Alteration of floor and roof structures</td>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td>C</td>
<td>Construct recycle bins</td>
<td>4</td>
<td>A</td>
</tr>
<tr>
<td>D</td>
<td>Carry out concrete and framing works</td>
<td>8</td>
<td>B</td>
</tr>
<tr>
<td>E</td>
<td>Fix high-temp. burner</td>
<td>8</td>
<td>C</td>
</tr>
<tr>
<td>F</td>
<td>Install control system</td>
<td>6</td>
<td>C</td>
</tr>
<tr>
<td>G</td>
<td>Install air pollution control device</td>
<td>10</td>
<td>D,E</td>
</tr>
<tr>
<td>H</td>
<td>Commissioning &amp; handover</td>
<td>4</td>
<td>F,G</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>50</strong></td>
<td></td>
</tr>
</tbody>
</table>

Develop a network for this problem. Identify its critical path and compute the total project completion time.

ABHO/abho
Sintok