THE OPEN UNIVERSITY OF SRI LANKA
DEPARTMENT OF MECHANICAL ENGINEERING
BACHELOR OF INDUSTRIAL STUDIES (INDUSTRIAL MANAGEMENT)
FINAL EXAMINATION 2009/2010

MEX 4240– OPERATIONS MANAGEMENT
DATE : 22nd March 2010
TIME : 1400hrs-1700hrs
DURATION : 03 hours

INSTRUCTIONS
1. Answer any five (05) questions only.
2. All questions carry equal marks.
3. Write your registration number clearly on your answer script.

1 (i) "Sound Operations Management is the key to achieving both high profitability and customer satisfaction by any enterprise". Discuss the validity of this statement with reference to four (04) topics that are embraced in the subject of operations management.

(ii) Discuss how a marketing company can become competitive over its rivals by paying due attention to competitive dimensions.

(iii) Describe the following terms,

a). Capacity Planning.
b). Resources of Production.
c). Production System.

2. (i) Describe the advantages of setting up of proper facilities layout in a workplace. How does it affect the productivity and well being of the people working in it?

(ii) Explain three types of production processes and discuss the applicability of different of facilities layouts for each type of process.

(iii) Draw a layout of a workshop/office or a service facility known to you. Propose changes to improve the efficiency and to minimize the time taken for materials handling while providing a pleasant working environment for those working therein.

3. (i) "Work study aims at improving the efficiency of employees at work by critically examining their work and improving the work processes and environment". Comment on the above statement.

(ii) Describe how you should prepare yourself for carrying out a time study in selected work stations in a manufacturing facility, explaining in adequate details the steps that have to be followed. How do you overcome the resistance of individual workers and that of the trade unions before you embark on recording the time consumed by workers for doing the job elements?

(iii) "Ergonomics pay attention to anatomical, physiological and psychological considerations of human beings when setting up Man-Machine interfaces". Explain the above statement.

4. (i) "Inventory management not only minimizes the capital tied up in stocks but also ensur maintaining sufficient stocks to meet the market demand on time".
Explain how you could achieve the two objectives simultaneously.

(ii) Describe the E.O.Q method used for determining optimum order quantity and orderi frequency.

(iii) A company selling 11,000 units of television a year has to plan the inventory and ord placing to minimize the costs. The fixed cost of placing an order is Rs.70,000/-. T stock holding cost is Rs.200/- per unit per year. Calculate the economic order quanti and the number of orders per year.

If the supplier would give a discount for an increase of 20% from the E.O.Q. on wh basis will you accept or reject his offer?

5. (i) Discuss as to how you could make use of Network Analysis in order to reduce t completion time of a project with several activities while optimizing the manpow requirement and other resources.

(ii) In the context of Network Analysis write short notes on the following,

a). Activity.
b). Event.
c). Job Slack/Float.
d). Critical Path.

(iii) Kandy Marketing Co. considers introducing a new product to the market. The followi activities have to be undertaken before the product is introduced.

| Activity | Description | Preceding Activities | Completion time(Weeks) |
|---|---|---|---|
| A | Conducting a market survey | - | 3 |
| B | Designing the project | - | 4 |
| C | Selecting distributors | A | 2 |
| D | Negotiating with banks | B,C | 5 |
| E | Recruiting sales people | D | 3 |
| F | Training sales people | E | 2 |
| G | Distributing samples | B,C | 8 |
| H | Advertising the project/product | F,G | 2 |

a). Construct the network diagram for the project clearly labeling events and activities.

b). Identify the critical path and evaluate the total time needed for the project.

6. (i) "Demand forecasting is a prerequisite to effective Production and Inventory Planning in a manufacturing organization". Explain.

(ii) Describe the following two demand forecasting techniques.

a). Moving Average
b). Exponential Smoothing

(iii) The following indicates the actual sales of a Furniture item marketed by ABC Solid Woods Co. over a period of one year.

| Month | Jan. | Feb. | Mar. | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sales | 160 | 185 | 225 | 400 | 150 | 250 | 240 | 200 | 280 | 200 | 220 | 320 |

a). Compute three months moving average demand for the period from April to December.

b). Compute the demand using exponential smoothing method for the period from May to August for a smoothing constant of 0.2.

7. (i) Discuss the importance of establishing a good "quality management system" in a manufacturing company producing a household item. What are the consequences of non conformance to quality?

(ii) Differentiate Quality Assurance from Quality Control. Propose the most suitable practice from the above two for sustainability and profitability of the organization you work? Give reasons for your choice.

(iii) Explain the quality costs that have to be borne by a manufacturing organization which maintains a quality management system.

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