

SOUTH EASTERN UNIVERSITY OF SRI LANKA

THIRD EXAMINATION IN BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY FOR MANAGEMENT STUDIES- 2009/2010

SEMESTER – II, FEBRUARY - 2012

ITMS 3213 - OPERATIONS MANAGEMENT

Answer all questions.

Each question carries equal marks.

Calculators can be used.

Time: Three hours

01 a) “Operations is a strategic elements in accomplishing organizational goals”. Identify and briefly explain the basic goals and objectives of operations management?

(06 Marks)

(b) Briefly explain the four main functions of operation system.

(06 Marks)

(c) Differentiate, transformed inputs and transforming inputs in operations system.

(04 Marks)

(d) Distinguish project production and unit production.

(04 Marks)

(Total 20 Marks)

02. (a) Identify the characteristics of a well-designed service system

(06 Marks)

(b) “By applying the Just –in-Time (JIT) philosophy in manufacturing can improve the productivity”. Explain using the Shigeo Shingo’s seven wastage.

(07 Marks)

(c) “Forecasting in different functional arrears of management such as Marketing, Production, Finance and Personnel plays a crucial role for planning ahead.” Why forecasting is important in operations management?

(05 Marks)

(d) List out the elements of a good forecasting.

(02 Marks)

(Total 20 Marks)

03 (a) Amana Hotel's annual Sugar usage is 12000 Kg per annum. Ordering cost per order is Rs. 200.00 and holding cost Rs.10.00 per annum per Kilogram. Which order size minimizes inventory cost? What is the total Inventory cost?

(04 marks)

(b) Alex company's annual consumption is 36000 units, ordering cost per order is Rs 250 and holding cost is 2% on cost per unit per annum. Cost per unit is Rs 100.

(i) Draw the table if the order size is 9000, 6000, 3000, 2000 and 1000 units.

(ii) From the table find out the economic order size and give reason.

(iii) Determine total ordering cost, total holding cost and total inventory cost at the optimal order size.

(iv) If it is forecast that the next year consumption will increase to 144000 units, what will be the EOQ? What is the total inventory cost? (10 Marks)

(c) Average daily demand for a product is 50 units. The review period is 20 days, and lead time is 5 days. Management has set a policy of satisfying 98% percent of demand from items in stock (Z value is 2.33). At the beginning of the review period there are 300 units in inventory. The daily demand standard deviation is 5 units. How many units should be ordered? When it should be order? (06 Marks)

(Total 20 Marks)

04. (a) The basis for the quality control is specification of product or service. What is product specification? Briefly explain. (03 Marks)

(b) You have been appointed as a quality controller in an optics lens manufacturers always uses a sample of size 20 for the quality control. Total number of units defective is 370 for the past 100 samples. The system is believed to be operating under normal conditions.

(i) Construct a control chart with control limits such that measurements for 99.7% of the units under normal conditions would fall within the control limits.

(ii) Suppose you find the number of units defective in the next four samples is 6, 8, 4 and 5 units respectively, what can you tell about the process now? Why?

(14 Marks)

(c) What are the criteria usually considered for process layout.

(03 Marks)

(Total 20 Marks)

05. You have been assigned the job to set up an electric fan assembly line. This product conversion process consisting of 11 work elements is to be produced down a continuous production method. The work elements, work contents, and preceding work elements are given below.

<u>Work elements</u>	<u>Work contents (Minutes)</u>	<u>Preceding work elements</u>
A	08	-
B	10	-
C	08	A
D	07	A
E	08	C
F	08	B,C
G	15	E
H	10	E
I	04	D,G
J	10	G, I
K	12	F, H, J

Other information;

Annual requirement for the product is 6000 units. It should be produced within 350 days in a year at 8 hours per day. The technological constraints are that B and C, G and I must not be carried out at the same work station. But work elements I and J must be carried out at the same work station.

You are required to;

(i) Draw the Precedence Diagram

(02 Marks)

(ii) What is the cycle time and theoretical minimum number of work station?

(02 Marks)

- (iii) Using the longest operation time rule assign work element to work station and calculate the balance delay at each work station (08 Marks)
- (iv) What is the efficiency of the line? (01 Marks)
- (v) Is there any alternative layout? Explain (03 Marks)
- (vi) If the annual requirements increased to 7800 units, can you improve the efficiency of the line? Explain. (04Marks)

(Total 20 Marks)

Work element	Work content (minutes)
A	08
B	10
C	03
D	07
E	08
F	08
G	13
H	10
I	04
J	10
K	12