



UNIVERSITY OF KELANIYA - SRI LANKA

Centre for Distance and Continuing Education

Faculty of Commerce & Management Studies

Bachelor of Business Management (General) Degree Third Examination (External) - 2011

December 2013

BMGT E3045 – Operational Management

No. of Questions: 08

Time: 03 hours

Answer any five (05) questions.

01. (a) Define operations system. Explain how the concept of operation system helps in understanding of production and operations management.

(08 marks)

- (b) i. Draw a systems view diagram of any service organization of your choice.
ii. Identify and name its various components.
iii. Describe its conversion process.

(12 marks)

(Total 20 marks)

02. (a) i. Describe the various stages involved in satisfying a customer's need.
ii. Which of those stages form a part of production and operations management? Explain.

(08 marks)

- (b) i. What is meant by product design?
ii. Explain the difference between form design and functional design.
iii. What are the factors that influence product design?

(12 marks)

(Total 20 marks)

03. (a) i. What is method study?
ii. Explain the different steps involved in method study?

(07 marks)

- (b) i. Define the term "Work measurement"
ii. Indicate briefly the steps in the process of work measurement.

(07 marks)

- (c) A work measurement study was carried and in ABC Ltd. The following results were obtained for 8 hours working day.

units produced	300
Idle time	10%
Performance Rating	120%
Allowance Time	15% of normal time

Calculate standard time for the job

(06 marks)
(Total 20 marks)

04. (a) i. What are the factors that influence the location of a production plant.
ii. What key factors would you consider when locating the followings?
I. Nursery School
II. Gas based fertilizer plant
III. Fast food restaurant

(10 marks)

- (b) A sports good firm intends to set up a unit to produce tennis rackets. It is considering sites A, B, and C for the purpose.
Cost data for the sites are given in the following table.

Site	Fixed cost	ratable cost
A	RS. 50, 000	RS. 135
B	RS. 100, 000	RS. 110
C	RS. 120, 000	RS. 120

If the selling price is Rs. 300 per racket and the annual demand is 3000 units. Which site would you recommend? (Justify your answer)

(10 marks)
(Total 20 marks)

05. (a) i. What is the difference between a product based layout and a process based layout?
ii. Explain the waiting line effect that can be seen in customer oriented layout.

(06 marks)

(b) "Line Balancing is a direct method of raising productivity"

Discuss the above statement with suitable examples.

(04 marks)

(c) The following tasks must be performed on an assembly line in the sequence and times specified.

Task	Task time (in seconds)	task that must precede
A	50	-
B	40	-
C	20	A
D	45	C
E	20	C
F	25	D
G	10	E
H	35	B,F,G

- i. Construct an activity diagram for the tasks.
- ii. What is the theoretical minimum number of work stations required to meet a forecasted demand of 400 units per eight - hour day?
- iii. Compute the efficiency of the line.

(10 marks)

(Total 20 marks)

06. (a) i. What do you understand by capacity?

ii. Explain the activities involved in long term capacity planning decision.

(08 marks)

(b) i. Why is forecasting important for an operations manager?

ii. Explain the Delphi technique of forecasting. When would you use this method?

iii. The following is the historical demand for a product.

Month	Jan.	Feb.	Mar.	Apr	may	June
demand (units)	15	11	12	12	16	17

Find the forecast for July using single exponential smoothing?
(smoothing constant is 0.2 the forecast for January was 14 units)

(12 marks)

(Total 20 marks)

07. (a) i. Explain the relationship between quality and productivity.
 ii. What are the different costs associated with quality? Explain. (06 marks)

- (b) i. What is the purpose of inventory control? (02 marks)

ii. A man buys plastic boxes in bulk and uses them to pack his chocolates. His annual requirement of boxes is 1200, and each box costs him RS. 30. He has estimated that his ordering cost are RS. 10 per order and his carrying costs are 20% .

1. How many boxes should be order at a time so as to minimize his expenses.
2. If the supplier sells the boxes only in lots of 25, should he buy 50 or 75 ? (show your calculations)

(12 marks)
 (Total 20 marks)

08. (a) i. What is materials management?
 ii. How does materials management in a manufacturing operation differ from that in a non - manufacturing operation?

(04 marks)

- (b) Explain briefly the major differences between aggregate planning in manufacturing and aggregate planning in services.

(04 marks)

- (c) A company is setting up a production plan for its product for next 3 months. The information given in the following table.

Demand and working days

	January	February	March
Demand	1600	1700	900
Number of working days	25	23	24

Other informations,

- inventory carrying cost RS. 200 per unit / month
- Cost of hiring and training RS. 400.00 per worker
- laying off cost RS. 500.00 per worker
- Time required for 1 unit 5 labour hour
- Regular time wage RS. 10.00 per hour
- Overtime wage RS. 15.00 per hour
- Starting inventory 400 units
- Safety stock 25% of monthly demand
- Present workforce 40

Develop an aggregate plan using chase strategy.

(12 marks)

(Total 20 marks)