



**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) – 2024

May - 2026

**BMGT E3045 – Operational Management**

No of questions : 08 (Eight)

Time: 03 Hours

Answer any **Five (05)** questions.

**Question No. 01**

- a) Define “Operations Management” and explain its importance in achieving organizational objectives.  
(05 Marks)
- b) Explain how effective Operations Management contributes to productivity, quality, and customer satisfaction in a business.  
(05 Marks)
- c) What is the role of an operations manager in managing business operations? Explain with examples.  
(05 Marks)
- d) Explain the structure of an operations system with a suitable example from a service organization.  
(05 Marks)

**(Total 20 Marks)**

### Question No. 02

- a) Identify and explain four modern practices used in Operations Management today. How do these practices help organizations improve efficiency, quality, and customer satisfaction? Give relevant examples.

(10 Marks)

- b) Identify and explain the major eras in the historical development of Operations Management.

(10 Marks)

**(Total 20 Marks)**

### Question No. 03

- a) What are the key factors that influence capacity decisions in an organization?

(04 Marks)

- b) Explain how capacity planning contributes to improved operational efficiency and cost reduction.

(04 Marks)

- c) ABC Manufacturing (Pvt.) Ltd. produces two products: Standard Chairs (S) and Luxury Chairs (L). The company is facing increasing demand but limited production capacity. Each product requires time in three departments: Cutting, Assembly, and Finishing.

Resource Requirements per unit are given below

| Product | Cutting<br>(hrs) | Assembly<br>(hrs) | Finishing<br>(hrs) | Profit (Rs.) |
|---------|------------------|-------------------|--------------------|--------------|
| S       | 2                | 3                 | 1                  | 45           |
| L       | 4                | 2                 | 3                  | 70           |

Weekly Capacity Available

Cutting: 120 hours

Assembly: 100 hours

Finishing: 90 hours

You are required to develop a mathematical model to maximize profit for management.

(12 Marks)

**(Total 20 Marks)**

**Question No. 04**

- a) A retail supermarket chain has experienced fluctuating demand for seasonal products over the last 3 years.
- i. Identify an appropriate forecasting method they should use for short-term demand planning.  
(03 Marks)
  - ii. Justify your choice in above answer with reference to demand patterns.  
(03 Marks)
  - iii. Explain how forecasting errors can impact inventory decisions.  
(03 Marks)
- b) A logistics company is planning capacity for next year based on past shipment data.
- i. Explain how trend analysis can be used for forecasting.  
(03 Marks)
  - ii. Identify possible sources of forecasting errors.  
(03 Marks)
- c) A hotel kitchen forecasts rice consumption using exponential smoothing. Forecast for week 1 was 800 kg, but actual consumption was 1,000 kg. Using  $\alpha = 0.5$ ; Compute the week 2 forecast.

(05 Marks)

**(Total 20 Marks)**

**Question No. 05**

- a) A textile company is experiencing delays in production due to poor arrangement of machines and long movement of materials between departments. The management is considering a new plant layout design.
- i. What problems exist in the current layout? (03 Marks)
- ii. Suggest suitable layout improvement strategies. (03 Marks)
- b) A toy manufacturing company plans to introduce a new assembly line for producing toy cars. The tasks listed below must be completed according to the given sequence relationships. The company expects the line to produce 30 toy cars per hour.

| Task | Task Time<br>(Seconds) | Immediate Predecessor |
|------|------------------------|-----------------------|
| A    | 40                     | None                  |
| B    | 25                     | A                     |
| C    | 30                     | A                     |
| D    | 20                     | B                     |
| E    | 45                     | C                     |
| F    | 15                     | D                     |
| G    | 35                     | E                     |
| H    | 10                     | F,G                   |

Answer the following questions:

- i. Draw the net work (activity) diagram for the assembly process.
- ii. Determine the cycle time required to achieve the desired production rate.
- iii. Calculate the theoretical minimum number of workstations required.
- iv. Assign tasks to workstations using a suitable line balancing method.
- v. Calculate the efficiency of the assembly line.

- vi. Identify the idle time in each workstation.
- vii. Comment on the balance of the line.

(02 Marks for each)

**(Total 20 Marks)**

**Question No. 06**

- a) A garment manufacturing firm has experienced a high rate of employee turnover and reduced productivity in its sewing department. Workers have reported that their tasks are monotonous and physically exhausting.

- i. Identify the issues associated with the existing job design.

(04 Marks)

- ii. Suggest appropriate job design methods that could enhance employee motivation and increase productivity.

(04 Marks)

- iii. Describe the potential benefits that may result from implementing these changes.

(04 Marks)

- b) A worker in a packaging department completes a task in an observed time of 12 minutes. The performance rating is 110%, and the allowance factor is 15%.

- i. Calculate the normal time.

(03 Marks)

- ii. Calculate the standard time for the task.

(03 Marks)

- iii. Explain the importance of standard time in operations management.

(02 Marks)

**(Total 20 Marks)**

### Question No. 07

- a) A factory manager argues that spending on quality training and maintenance increases operating costs unnecessarily.
- i. Do you agree with the manager? Explain your answer using Cost of Quality concepts.  
(04 Marks)
  - ii. How can prevention costs reduce total operational costs in the long term?  
(04 Marks)
- b) An electronics manufacturing company spends a large amount on final product testing. However, customers still report defects after purchase.
- i. Why may appraisal costs alone fail to ensure quality?  
(04 Marks)
  - ii. Recommend suitable error prevention activities for the company.  
(04 Marks)
  - iii. Explain the relationship between prevention costs and external failure costs.  
(04 Marks)
- (Total 20 Marks)**

### Question No. 08

Select any five of the following topics and write short notes on each:

- i. ABC analysis
  - ii. Division of labour
  - iii. Fixed position Layout
  - iv. Just-In-Time (JIT)
  - v. Mean Absolute Deviation (MAD)
  - vi. Acceptance Sampling
  - vii. Operational Characteristics Curve
  - viii. Material Requirements Planning (MRP)
  - ix. Decision Tree
  - x. Economic Order Quantity (EOQ)
- (04 marks for each)  
**(Total 20 Marks)**