



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) – 2021

April - 2024

BMGT E3045 – Operational Management

No of questions : 08 (Eight)

Time: 03 Hours

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

Question No. 01

- a) What are the major functions in Operations Management? Explain your answer, giving examples.
(05 marks)
- b) Explain the concept of production system with its characteristics, giving a practical example.
(05 marks)
- c) Describe the development of the historical evaluation of Operations Management. Give specific examples of at least three developments in your answer.
(10 marks)

(Total 20 Marks)

Question No. 02

CGK Steel Company is part of a large Indian corporation, and it has production facilities in the cities of Colombo, Gall and Kandy in Sri Lanka. Some of Sri Lanka's steel manufacturing operations take place in these facilities. Many CGK factories are capital-intensive, which means that production relies heavily on the use of machinery and equipment to manufacture steel products. These include steel plates, steel rolls, coils, and wire bars. During manufacturing, the rails undergo an automated inspection process to maintain quality. The main advantage of this approach is that production efficiency is improved. Consistency and quality are also guaranteed. Based on the given scenario, answer the following questions.

- a) What is meant by the term manufacturing?
(05 marks)
- b) CGK Steel produces a wide range of intermediate goods in high quality. What does this mean?
(05 marks)
- c) What are the benefits of employing the capital incentive technique (using machinery) as opposed to the labour incentive method (using labour) in producing high-quality goods? Explain your answer.
(10 marks)

(Total 20 Marks)

Question No. 03

- a) What is capacity planning in Operations Management?
(05 marks)
- b) What are the key steps in the capacity planning process?
(05 marks)
- c) A glass production company is evaluating three methods to address its backlog;
- i. arrange for subcontracting
 - ii. being overtime production
 - iii. construct new facilities

The correct choice depends largely on future demands, which may be low, medium or high. The management ranks the respective probabilities, and a cost analysis reveals the effect on profit as shown below,

Alternative	Profits ('00000) if the demand is		
	Low	Medium	High
Probability	.1	.5	.4
1	10	50	50
2	-20	60	100
3	-150	20	200

Based on the above information, you are required to,

- (i) Draw a decision tree showing the decisions, chance events, and their probabilities, as well as the profitability of outcomes.

(08 marks)

- (ii) Using the decision tree, state what Glass production company should decide.

(02 marks)

(Total 20 Marks)

Question No. 04

- a) Give two examples showing why a business needs a forecast.

(05 marks)

- b) Explain why it is important to monitor forecast errors.

(05 marks)

- c) The following data are monthly sales of XYZ company.

Month	Actual Sales
1	56
2	76
3	58
4	67
5	75
6	76

You are required to,

- i. Calculate forecast sales for months 4,5,6, and 7 using a three-month moving average method.

(05 marks)

- ii. Calculate forecast for months 4,5,6, and 7 using an exponential smoothing method.

(Assume forecasted sales for month 3 is 61 and, alpha vale is 0.3)

(05 marks)

(Total 20 Marks)

Question No. 05

- a) State five factors that should be considered in the facility location decision.

(05 marks)

- b) Describe the steps used to make facility location decisions.

(05 marks)

- c) State and discuss five advantages and five disadvantages of globalization in Operations Management.

(10 marks)

(Total 20 Marks)

Question No. 06

- a) Identify the four types of layouts and explain their characteristics.

(05 marks)

- b) Explain an example of a process layout in a local business context. Draw a picture of the locations of the department that you mentioned business.

(05 marks)

- c) The tasks given in the following table will be performed on an assembly line in the specified sequence. The desired output for an assembly line is 400 units per shift of 8 hours.

Activity	Activity duration (Seconds)	Immediate predecessor
A	25	none
B	60	A
C	35	B
D	45	B
E	10	B
F	50	C,D,E

- (i) Construct an activity diagram for the tasks.
- (ii) Compute the cycle time (in seconds) to achieve the desired output rate.
- (iii) What is the theoretical minimum number of workstations?
- (iv) State which work activity lies should be assigned to each workstation.
- (v) Compute the efficiency of the line.

(02 marks for each)

(Total 20 Marks)

Question No. 07

- a) What is meant by method study? State its objectives.

(05 marks)

- b) What is meant by work measurement? State its objectives.

(05 marks)

- c) The following information was the times recorded for each element in minutes for trials of a particular job.

Elements	Cycle observed timings (in minutes)						Performance
	1	2	3	4	5	6	Rating %
A	1.10	1.08	1.15	1.16	1.07	1.10	95
B	3.00		2.20		3.10		90
C	0.92	0.88	0.85	0.88	0.90	0.94	105
D	1.23	1.30	1.26	1.33	1.28	1.30	100
E	1.46	1.64	1.55	1.52	1.62	1.60	85
F	1.80	1.78	1.76	1.80	1.82	1.10	110

- i. Calculate the mean observed time for each element. (02 marks)
- ii. Calculate the normal time for each element. (02 marks)
- iii. Calculate the standard time for each element using an allowance factor of 15 percent of job time. (03 marks)
- iv. Calculate the standard time for completing a job. (03marks)

(Total 20 Marks)

Question No. 08

- a) What is aggregate planning? Explain its process. (05 marks)
- b) What is material requirement planning (MRP)? Explain (05 marks)
- c) Discuss the importance of Just-in-Time (JIT) concept, indicating its some applications. (10 marks)

(Total 20 Marks)