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—Visionary IB Education—
Success in the IB Diploma

BUSINESS MANAGEMENT

STANDARD AND HIGHER LEVEL

TOPIC FIVE: OPERATIONS MANAGEMENT

Topic FIVE end of unit assessment

Section A: 50 minutes

Section B: 30 minutes

INSTRUCTIONS TO STUDENTS

- Do not open this assessment until instructed to do so.
- Section A: answer **all** questions.
- Section B: answer **one** question.
- A calculator **is** required for this assessment.
- A clean copy of the IB Business Management formulae sheet **is** required for this examination paper.
- The maximum mark for this assessment is **[45 marks]**.

SECTION A

Answer **all** questions from this section.

GENERAL MOTORS (GM)



Happy General Motors customers?

GM's has always had complex operations management objectives to implement. There has been a strategic focus of the company to focus on product and process innovation to improve sales, improve productivity and reduce costs. There has been an industry-wide shift to lean production and just-in-time manufacturing (JIT), pioneered by GM's rival Toyota. The firm has struggled with quality issues for many decades now, including very low customer satisfaction ratings, expensive reworking on the production line to fix manufacturing defects, and design defects such as its unprecedented vehicle recall in the wake of its faulty accelerator and ignition problems now

linked to at least 23 deaths. The automaker has issued over 70 recall campaigns of 30 million vehicles.

In 1998, it took GM 50 percent more hours to make a car than Toyota – and the difference was so great that GM did not make a profit on any of its cars. Now GM is attempting to emulate Toyota by introducing a global manufacturing system of its own and has been closing the productivity gap.

GM's new manufacturing system is vital to its survival, it involves:

- 'Just-in-time'
- Continuous improvement
- Personal responsibility
- Flexible production – Several different models can be produced on the same assembly line
- Design for manufacture – Making car components easy to fit together on the assembly line

GM aims, like Toyota, to produce the same car by the same method in any of its production plants around the world. GM is also investing heavily in process innovations such as designing plants flexibly around a single type of vehicle, such as a small car, medium car or truck (SUV). And it is also integrating the design of the car and the manufacturing process to gain efficiencies. Each plant can quickly change the specifications of the models it produces to adopt to local conditions, although it shares a common platform, including engines and transmissions, across the range. This combination of global manufacturing and design standards with local production is the key to the future, according to GM's senior management.

GM's new manufacturing system is part of a fundamental reorganisation of the giant company, introduced in 2010, which is already paying dividends in its North American manufacturing operations.

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GM now has five of the top 10 most productive US assembly plants, and has substantially closed the productivity gap with Toyota.

Another key part of GM's new TQM and lean production is the relationship with parts suppliers, who typically provide 85% of the parts that make up a car. GM says its supplier relationships are critical and it needs to bring them into its global manufacturing system. But it also admits that, with the company losing billions, it is squeezing the suppliers to lower their prices and investigating options for making key components for its vehicles itself.

Currently senior management are considering whether to make two specific component parts (X and Y) for its new Cadillac models or whether to purchase these parts from a reliable Asian manufacturer with whom GM has a good and established relationship. Financial data is contained in Figure 1 below.

Products	X	Y
Direct labour costs per unit	\$5	\$4
Direct materials costs per unit	\$4	\$12
Fixed factory costs allocated to each product (monthly)	\$2 000 000	\$3 000 000
Business overhead costs (administration and marketing) allocated to each product monthly	\$6 000 000	\$8 000 000
Current monthly output (units)	500 000	1 000 000
Unit cost of product if bought-in from supplier (including transport costs from Asia)	\$11	\$24

Figure 1: Key financial information in the cost to buy or cost to make decision.

QUESTIONS:

- Define *supply chain*. [2 marks]
- Outline **three** general factors that affect a firm's productivity. [3 marks]
- Calculate the total cost to GM to buy **and** make each of the components X **and** Y. [4 marks]
- State whether **each** of the components should be made by GM or purchased from its Asian supplier. [2 marks]
- Compare just-in-case (JIC) and just-in-time (JIT) stock management systems. [6 marks]
- Evaluate different approaches to quality improvement. [8 marks]

SECTION B

Answer **one** of the following questions.

CONCEPT QUESTIONS

1. With reference to one or two organisations that you have studied, discuss operations management **strategies** and **ethical** practices for ecological, social (human resource) and economic sustainability. **[20 marks]**
2. With reference to one or two organisations that you have studied, discuss production methods in relation to business **strategy** and **innovation**. **[20 marks]**
3. With reference to one or two organisations that you have studied, discuss **strategies** associated with the location of production and the resultant organisational **change**. **[20 marks]**

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FORMULAE TO BE USED IN IB BUSINESS MANAGEMENT EXAMINATIONS

The following formulae will be used in the IB Business Management external assessment. A copy of the formulae **will be provided for students in the examination**. A copy should be provided for students in mock examinations and tests, where applicable.

FORMULAE FOR RATIO ANALYSIS

PROFITABILITY RATIOS

$$\text{Gross profit margin} = \frac{\text{Gross profit}}{\text{Sales revenue}} \times 100$$

$$\text{Net profit margin} = \frac{\text{Net profit}}{\text{Sales revenue}} \times 100$$

LIQUIDITY RATIOS

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$\text{Acid test (quick) ratio} = \frac{\text{Current assets} - \text{stock}}{\text{Current liabilities}}$$

EFFICIENCY RATIOS

$$\text{Return on capital employed (ROCE)} = \frac{\text{Net profit before interest and tax}}{\text{Total capital employed †}} \times 100$$

† **Capital employed** = loan capital (or long-term liabilities) + share capital + retained profit

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$$\text{Stock turnover (number of times)} = \frac{\text{Cost of goods sold}}{\text{Average stock}} \quad \text{HL}$$

or

$$\text{Stock turnover (number of days)} = \frac{\text{Average stock} *}{\text{Cost of goods sold} †} \times 365 \quad \text{HL}$$

* Where average stock = (opening stock + closing stock) ÷ 2

† Where cost of goods sold is an approximation of total credit purchases

$$\text{Debtor days ratio (number of days)} = \frac{\text{Debtors}}{\text{Total sales revenue} †} \times 365 \quad \text{HL}$$

† Where total sales revenue is an approximation of total credit sales

$$\text{Creditor days ratio (number of days)} = \frac{\text{Creditors}}{\text{Total credit purchases} †} \times 365 \quad \text{HL}$$

† Where cost of goods sold is an approximation of total credit purchases

$$\text{Gearing ratio} = \frac{\text{Loan capital}}{\text{Total capital employed}} \times 100$$

OTHER FORMULAE

INVESTMENT APPRAISAL

$$\text{Average rate of return} = \frac{(\text{total returns} - \text{capital cost}) \div \text{years of use}}{\text{Capital cost}} \times 100$$

$$\text{Net present value} = \Sigma \text{ present values of return} - \text{original cost} \quad \text{HL}$$

CAPACITY UTILISATION AND PRODUCTIVITY

$$\text{Capacity utilisation rate} = \frac{\text{Actual output}}{\text{Productive capacity}} \times 100 \quad \text{HL}$$

$$\text{Productivity rate} = \frac{\text{Total output}}{\text{Total input}} \times 100 \quad \text{HL}$$

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COST TO BUY AND COST TO MAKE

Cost to buy = Price x quantity **HL**

Cost to make = fixed costs + variable costs x quantity) **HL**