



Principles of Business Operations

05 September 2018

Marking Scheme

This marking scheme has been prepared as a **guide only** to markers. This is not a set of model answers, or the exclusive answers to the questions, and there will frequently be alternative responses which will provide a valid answer. Markers are advised that, unless a question specifies that an answer be provided in a particular form, then an answer that is correct (factually or in practical terms) **must** be given the available marks.

If there is doubt as to the correctness of an answer, the relevant NCC Education materials should be the first authority.

Throughout the marking, please credit any valid alternative point.

Where markers award half marks in any part of a question, they should ensure that the total mark recorded for the question is rounded up to a whole mark.

Question 1

a) Examine the importance of the following factors in the *design of goods*: 6

- i. Simplicity of design
- ii. Environmental friendliness

i. Simplicity of design:

- ***The simpler the design, the less prone goods are to errors***
- ***As a consequence they are less likely to break down or fail***
- ***This, in turn, will lead to a reputation for reliability***
- ***It will help to increase quality and improve customer satisfaction***

Award 1 mark for each salient point/strand of explanation, to a maximum of 3 marks

ii. Environmental friendliness:

- ***Increasingly important for organisations to design goods that are environmentally friendly***
- ***They should have a high degrees of recyclability, disassembly, etc.***
- ***They should not use materials that have a negative impact on the environment (be aware of their carbon footprint)***
- ***Failure to take account of environmental issues can have a negative effect on the reputation of a company***

Award 1 mark for each relevant point//strand of development, to a maximum of 3 marks (total 6 marks)

b) Describe how effective *Service Encounter Design* can help to increase the levels of customer satisfaction. 4

- ***The focus is on developing customer contact behaviour and skills***
- ***Should design how employees interact with customers during service delivery***
- ***The more effective the design, the more efficient the levels of service offered to customers***
- ***Enhanced levels of service can play a major part in increasing customer satisfaction levels***

Award 1 mark for each correct point/developed strand of analysis, to a maximum of 4 marks.

c) Explain what is meant by the term *Value Chain*. 2
The value chain measures the “added value” of goods and services and information as they pass through the organisation’s processes.

Award 2 marks for correct definition, 1 mark for partial definition.

- d) Assess why the following are commonly used by organisations as *key performance measures*:
- i. Financial
 - ii. Flexibility

Give credit for all reasonable points which may include:

i. Financial:

- ***This is typically a high priority for organisations***
- ***It can include income and profit***
- ***Also covers earnings per share – important for shareholders***
- ***Labour and materials costs are also an important consideration***
- ***Financial measures can indicate the financial health of an organisation, or equally importantly, highlight potential problems***

ii. Flexibility:

- ***The pace of change in today's business world is faster than ever with new opportunities constantly emerging***
- ***Flexibility is the ability to adapt quickly and effectively to changing requirements***
- ***Design flexibility is the ability to develop a wide range of goods or services to meet different or changing customer needs***
- ***Volume flexibility is the ability to respond quickly to changes in volume demand***
- ***So flexibility is an effective measure of how well an organisation can take advantage of new opportunities or requirements***

1 mark for each relevant point/strand of explanation, 4 marks for each measure, to a maximum of 8 marks.

Total 20 Marks

Question 2

- a) Discuss the main benefits that an organisation can achieve through the effective use of *forecasting and demand planning*. 6

Answers could make reference to the following:

- **Higher capacity utilisation**
- **Reduced inventories and costs**
- **More efficient process performance**
- **Increased flexibility**
- **Improved customer service**
- **Increased profits**

1 mark for each correct point, to a maximum of 6 marks.

- b) Assess, with the aid of examples, how the following can be used for *forecasting* purposes: 6

- i. Trends
- ii. Seasonal patterns

i. Trends:

- **Used to measure the underlying pattern of growth or decline over a period of time**
- **Generally used over longer periods of time to “miss out” short-term fluctuations in demand**
- **Allow any relevant example, e.g. how sales of a particular model of car have risen or fallen over a three-year period**

ii. Seasonal patterns:

- **Used to show repeatable patterns of demand**
- **This is based over a short period of time**
- **Allow any relevant example, e.g. how sales at a burger bar increase over school holidays**

Award 2 marks for each correct assessment, plus 1 mark for each correct example, to a maximum of 6 marks.

- c) Analyse the importance of employees being trained to use manufacturing technologies correctly. 4

Give credit for all reasonable points, which may refer to:

- **Health and safety – to reduce the risk of industrial injury**
- **Efficiency – to ensure that the technology is used in the most efficient way and achieves maximum benefit**
- **To avoid breakdowns – which may result in bottlenecks and delays**
- **To avoid compensation payments – employees may claim against the company if they suffer injuries as the result of inadequate training**

Award 1 mark for each correct point/strand of analysis, to a maximum of 4 marks.

- d) Explain TWO (2) ways in which a Customer Relationship Management (CRM) strategy can enable an organisation to learn more about its customers. **4**

Allow all reasonable ways which may include:

- ***It can help in segmenting markets – demographic or behavioural***
- ***It can track sales trends – overall or for specific demographic groups***
- ***It can help to identify buying patterns***
- ***It can help to identify the frequency of returning customers***
- ***It can help to identify which marketing initiatives work well for which groups of customers***
- ***It can help in forecasting customer retention***

Award 1 mark for each suggestion and a further mark for development, to a maximum of 4 marks.

Total 20 Marks

Question 3

- a) Describe THREE (3) of the major *layout patterns* commonly used by manufacturing organisations. 9

Allow any of the following:

- **Product layout**
 - **arrangement is based on the sequence of operations that are performed during manufacture**
 - **goods move in a continuous path from one process to the next**
- **Process layout**
 - **functional group of equipment or activities that do similar work**
 - **these are located together**
- **Cell Layout**
 - **uses self-contained groups of equipment and people needed to produce a particular good or service**
 - **often uses a “U” shape arrangement**
- **Group layout**
 - **classifies parts into “families” and uses efficient mass-production type layouts**
 - **layout centralises on both people expertise and equipment capability**
- **Fixed position layout**
 - **brings together resources necessary to manufacture a good or service**
 - **consolidates these in one physical location**

1 mark for each correct process, plus a further 2 marks for each correct discussion, to a maximum of 9 marks.

- b) Assess how *ergonomics* can help to increase the productivity levels of employees. 4

- **The aim is to design workspaces that take into account the physical capabilities of people**
- **This can help to reduce employee fatigue**
- **It can also reduce the human errors made by employees**
- **It can help to increase the accuracy and speed with which employees complete their work**
- **It can also help to increase flexibility and reliability**
- **All of these factors have a positive impact upon productivity**

Award 1 mark for each correct point/strand of explanation, to a maximum of 4 marks.

- c) Analyse why a *bill of materials (BOM)* plays a key role in *materials requirement planning (MRP)*. 5
- ***The purpose of MRP is to develop a forward looking, demand-based plan***
 - ***This provides an overview of what materials are needed for production***
 - ***Each product requires a bill of materials (BOM) which itemises all the component parts***
 - ***The BOM is sometimes called a product structure***
 - ***It lists all of the materials, components and sub-assemblies needed to make the required quantity of a product***
 - ***So, a BOM forms the basis for MRP***
 - ***It plays an important part in minimising inventory and reducing costs***
- Award 1 mark for each relevant point, to a maximum of 5 marks.***

- d) Explain what is meant by the the term *disaggregation*. 2

Disaggregation involves the translating of aggregate plans into short-term operation plans

Award 2 marks for correct definition, 1 mark for partial definition.

Total 20 Marks

Question 4

a) Examine why the following factors are often seen as potential *disadvantages* of *outsourcing*: 4

- i. Danger of creating a competitor
- ii. Information leakage to competitors

i. Danger of creating a competitor:

- ***The suppliers supplying the goods/services for you may acquire a range of associated skills and an understanding of the marketplace***
- ***This could enable them to supply the goods or services directly to customers themselves***
- ***Ultimately this could result in them providing competitive goods and services to customers***

ii. Information leakage to competitors:

- ***The supplier may not work for you on an exclusive basis***
- ***They may work for other companies in the same sector who are competitors***
- ***This could result in your trade secrets being passed to competitors giving them a competitive edge in the specific market***

Award 1 mark for each correct point, to a maximum of 4 marks.

b) Assess why *virtual integration* is an increasingly popular form of value chain management. 6

Give credit for all reasonable points, which may include:

- ***A value chain describes the flow of goods, services, information and financial transactions***
- ***Virtual integration takes away the need for the physical flow of information and financial transactions by automating them through the use of the Internet and EDI***
- ***The Internet and EDI increase online collaboration between business partners***
- ***Provides a popular way of working when business partners are located remotely***
- ***Information flows are quicker and more effective***
- ***Barriers between suppliers and distributors are less rigid***
- ***Costs tend to be lower***
- ***Aim is to ensure the availability of goods and services at the right time, in the right place, at the right cost and in the right quantity***

Award 1 mark for each correct point/analysis strand, to a maximum of 6 marks.

- c) Analyse why the following activities are important for successful operations managers:
- i. Understanding the needs of customers
 - ii. Continually learning from co-workers, competitors and customers

Give credit for all reasonable points, which may include:

i. Understanding the needs of customers:

- **Operations management is all about ensuring that goods and services are created and delivered successfully to customers**
- **It is vital therefore that the needs of customers are fully understood**
- **If they are not then the most appropriate goods and services may not be developed**
- **These will fail to satisfy customer requirements**
- **The result will, ultimately, be a lack of sales and a loss of profits**

ii. Continually learning from co-workers, competitors and customers

- **Today's business environment is fast moving and change is constantly required**
- **It is important to continually learn in order to ensure that products and services evolve**
- **It is also important to learn from the success of others and apply these lessons to your own environment**
- **Continual learning and improvement is also a core element of developing and delivering quality services and products**
- **So continual learning can help in achieving quality and remaining competitive**

Award up to 3 marks for each explanation (1 mark for each correct point, to a maximum of 6 marks).

- d) Explain the key differences between a *Business-to-Business (B2B)* and a *Customer-to-Customer (C2C)* technology value chain. 4
- **B2B refers to business to business**
 - **This involves some sort of commercial transaction between two different businesses**
 - **Very often takes part as an element of a supply chain**
 - **C2C refers to customer to customer**
 - **Customers (or consumers) come together to buy, sell or trade with each other**
 - **The customers interact directly with each other, for example on an online auction site**

Award 1 mark for each correct point, to a maximum of 4 marks.

Total 20 Marks

Question 5

- a) Analyse why *time* and *innovation* are frequently used as competitive priorities. 6

Time:

- **Customers demand quick responses to queries, order processing etc.**
- **They also want short waiting times in terms of order delivery etc.**
- **Customers want consistency in performance – all customer interactions should be dealt with promptly**
- **Organisations that excel in delivering on time establish a good reputation and this can create a competitive advantage**

Innovation:

- **Is the ability to apply a new discovery to practical goods and services**
- **Innovative organisations are able to meet better the needs and wants of their customers**
- **Innovation also allows an organisation to be first to market in order to gain a competitive advantage**

Award 1 mark for each correct point, 3 marks for each priority, to a maximum of 6 marks.

- b) Explain how “getting close to its customers” can help an organisation to achieve a competitive advantage. 4

Allow all reasonable points which may include:

- **A competitive advantage is an organisation’s ability to outperform its competitors**
- **A major factor in this is understanding a customer’s wants and needs**
- **Identifying what customers need and want requires “being close to the customer”**
- **This might involve undertaking market research, encouraging feedback (positive or negative), using questionnaires or interviews to ask specific questions**
- **All of the information gathered can be used to build up a picture of the wants and needs**
- **Developing products and services that address these wants and needs will help in gaining competitive advantage**

Award 1 mark for each correct point, to a maximum of 4 marks.

Marks
8

- c) Examine the FOUR (4) basic principles of *lean operations*.
- ***Elimination of waste – seeks to reduce the causes of waste such as spoilage, overproduction, scrap, rework and repair, or accidents and breakdowns***
 - ***Increased speed and response – the overall aim of lean is to achieve smooth efficient flow of materials and information throughout the value chain, which will improve both speed and response***
 - ***Improved quality – a key concept is continual improvement (e.g. eliminating the source of defects) which when combined with reductions in waste will result in improved quality***
 - ***Reduced cost – if waste is eliminated and quality is improved this will have the effect of reducing the costs associated with the production process and hence the unit costs of individual goods***

Award 1 mark for each correct principle, plus a further mark for a correct description, to a maximum of 8 marks.

- d) Explain the importance of ONE (1) of the key objectives of Six Sigma. 2
- Allow 1 mark for any of the following objectives:***
- ***Identify root causes of problems***
 - ***Permanently remove these causes***
 - ***Doing things right first time***
 - ***Eliminating waste***

Award a further mark for explaining the importance, i.e. link to efficiencies/cost savings/motivation, etc

Total 20 Marks

Question 6

- a) There are seven *quality control tools* that can be used by an operations manager. Explain how TWO (2) of these tools can help with problem solving. 4

Allow 1 mark for any of the following (2 maximum):

- **Flowcharts**
- **Run charts and control charts**
- **Check sheets**
- **Histograms**
- **Pareto analysis**
- **Cause-and-effect diagrams (Fishbone)**
- **Scatter diagrams**

Award a further mark for each explanation e.g. Flow charts are diagrams that demonstrate how the stages involved in a process fit together, making the process clear and easy to understand.

Maximum of 4 marks.

- b) Assess the role of the *Deming PDCA cycle* in the improvement of a product or process. 6

- **PDCA stands for Plan, Do, Check and Act**
- **Plan – assessing a product or process and developing a plan for how it can be improved**
- **Do – carrying out the plan**
- **Check – assessing the results to see if any the outcome is satisfactory or if any improvements are needed**
- **Act – if the results are satisfactory then the new process is adopted as a standard, if not then go through the full cycle again**

Award up to 2 marks for an understanding of the PDCA cycle, plus 1 mark for correctly explaining each step (4 marks), to a maximum of 6 marks.

- c) Analyse why Dell (the computer technology manufacturer) uses a *Pull System* supply chain strategy for its business. 6

- **Pull systems produce only what is needed further up the supply chain**
- **This is in response to specific customer demand**
- **Dell builds PCs and laptops to order**
- **Customers specify the exact configuration they want and Dell builds this accordingly**
- **No inventory is held**
- **A push system would not work for Dell as they do not know in advance the number of PCs to build and the different specifications that are required**

Award 1 mark for each correct point, to a maximum of 6 marks.

- d) Discuss why effective planning is an essential requirement for *Just-In-Time (JIT)* systems. 4

Give credit for all reasonable points, which may include:

- ***JIT is based on the concept of “pull” systems***
- ***Work is drawn from previous operations only at the time it is needed to meet demand***
- ***It is essential that the entire value chain must be synchronised***
- ***This involves many departments within an organisation – e.g. sales, order processing, procurement, manufacturing and logistics***
- ***It is essential that everything is where it should be when it needs to be***
- ***There should be no queues and no lateness if the JIT targets are to be met***

Award 1 mark for each correct point/discussion strand, to a maximum of 4 marks.

Total 20 Marks

End of paper

Learning Outcomes matrix

Question	Learning Outcomes assessed	Marker can differentiate between varying levels of achievement
1	1, 3	Yes
2	2, 4	Yes
3	3, 4	Yes
4	1, 2	Yes
5	1, 5	Yes
6	4, 5	Yes

Grade descriptors

Learning Outcome	Pass	Merit	Distinction
Examine the frameworks of operations management	Provide examination of the subject with some suitable examples and references	Provide detailed examination of the subject with adequate use of appropriate references and examples	Provide consistently critical and detailed examination of the subject with innovative use of highly appropriate references
Analyse the use of technology in operations management	Demonstrate adequate ability to analyse the topic	Demonstrate ability to provide detailed and coherent analysis of the topic	Demonstrate ability to provide comprehensive, lucid analysis of the topic
Assess the design of goods and services	Demonstrate an adequate awareness of issues associated with the subject and make some appropriate judgements	Demonstrate a sound awareness of issues associated with the subject and make consistently appropriate judgements	Demonstrate a detailed awareness of the complexity of issues associated with the subject and make highly appropriate judgements
Analyse how operations management processes are developed	Demonstrate adequate ability to analyse the topic	Demonstrate ability to provide detailed and coherent analysis of the topic	Demonstrate ability to provide comprehensive, lucid analysis of the topic
Evaluate the use of lean operations	Provide a reasonable assessment of the subject; Ideas are generally coherent	Provide a generally strong assessment with some well-reasoned assumptions; Ideas are consistently coherent	Provide a consistently strong assessment with well-reasoned and original assumptions; All ideas are highly coherent