higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

PRODUCTION AND QUALITY CONTROL N5

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This marking guideline consists of 5 pages.

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QUESTION 1

1.1 Capacity is the rate of output that can be achieved from a process, measured in units of output per unit of time. (2)

1.2 Design capacity is the rated output the equipment was designed to produce when running under normal conditions without stoppages. (2)

1.3 Fishbones are also known as cause and effect diagrams because they are used to record as many as possible potential causes of a problem before deciding which causes to focus on, for the purpose of developing counter-measures. (3)

1.4 Lean thinking defines any waste that creates value for the customer as systems and techniques have been developed to eliminate or at least minimise waste of all kinds. (3)

1.5 Order costs are those costs which must be incurred to obtain inventory, including preparation and revision of purchasing orders, selection of suppliers, placement of orders, monitoring orders, and costs related to reception, inspection, and storage and payment of goods. (3)

1.6 Lead time is the time that elapses between the moment when the decision is taken to place an order up until the consignment is received. (2)
[15]

QUESTION 2

2.1 Takes 6,5% longer, therefore efficiency is 93,5%✓

Rated capacity = hours per day × days per week x utilisation × efficiency✓

= 16 hours per day × 5 days/week × 0,8 × 0,935✓✓

= 59,84 hours per week✓ (5)

2.2
- A bottleneck is a work centre that is always overloaded (i.e. its output determines the output of the entire organisation.
  The entire organisation should focus on the following:
- Ensuring that the work centre never stops – work shifts and stagger lunch breaks
- Ensuring that compulsory stoppages are minimised
- Treating any breakdowns in the bottleneck centre as top priority
- Maximising processing speeds in the work centre
- Performing as much preparation as possible before the next job starts
- Investigating re-routing to other work centres (7)

2.3
- Set-up time
  The time taken to set up the machine or work centre for production purposes
- Move time
  The time taken to transport or move a job/product from one work centre to the next
- Queue time
  The time that a job waits in a work centre before it is processed
- Run time
  The time taken to perform the work on a task or job or assignment (8)

[20]

QUESTION 3

3.1 3.1.1 *Make to order* means that the manufacturing operations only make the product as specified by a customer order. The operation will only start once the customer has placed the order for a specific product. In other words, the organisation will manufacture exactly what the customer has ordered.

3.1.2 *Make to stock* means that the organisation will forecast the type of products that will be required by customers. The forecasted products will then be manufactured and put into finished goods stock. When the customer places an order, it will hopefully be in stock and may be delivered almost immediately to the customer.

(2 x 3) (6)

3.2 3.2.1 Continuous production is where the products flow continuously through the manufacturing operations, which means that they are not produced in batches.

3.2.2 Lot or batch type production is where the product is planned, scheduled, produced and controlled in identifiable batches.

3.2.3 Job shop production is where a manufacturing organisation has organised its production resources or operations according to function. The jobs then pass through the functional operation or work centre in batches.

3.2.4 Repetitive production covers the manufacture of high volumes of individual products; that is the production of very large quantities of the same type of product.

3.2.5 Just in time production is a production strategy which focuses on the continuous elimination of waste; waste being those activities that do not add value to the product.

(5 × 2) (10)

3.3
- Taking historical figures of capacity and averaging them
- Calculating the theoretical capacity by considering efficiency, utilisation, length of shift, number of shifts, overtime and rework at a work centre (4)

[20]

QUESTION 4

4.1
- Preparation of final accounts
- Profit planning
- Inventory valuation
- Cost control
- Determination of selling prices
- Production decisions (6)

4.2

	Week 1	**Week 2**	**Week 3**	**Week 4**
Sales forecast (units)	100	120	140	160
Production plan (units)	106	127,2	148,4	169,6
Load (hours)	53	63,6	74,2	84,8

(8)

4.3
- Manufacturing lead times
- Customer services
- Work in progress levels
- Schedule performance
- Product quality
- Efficiency of work centres
- Reprocessing and scrap (Any 6 × 1) (6)

[20]

QUESTION 5

5.1
- Provide a secure storage place.
- Limit access to the storage area.
- Use formal locations within this area to store inventory.
- Have authorised receipt and issue procedures.
- Undertake systematic stock taking on a periodic basis.
- Clearly identify/label inventory items. (6)

5.2
- Customer service
- Inventory investment
- Manufacturing, purchasing and distribution
- Profitability
- Return on investment (5)

5.3
- To determine the cost price of finished products
- To determine profitability
- To exercise control over costs (3)

5.4 5.4.1
- Break- even analysis is a graphic or algebraic representation of the relationship between production volume, costs, income and profit in an organisation.

It provides, amongst others, the following information:
- The influence on profit: if the business raises or lowers its prices.
- To what extent the profit will increase, with an increase in the volume of production and sales.
- The influence of an increase in fixed costs.
- An indication of the break-even volume.
- The sales volume and the production capacity necessary for the planned profit. (6)

5.4.2 A job costing system is applied particularly in a production unit where the work differs from task to task according to the requirements of the purchaser. Each task is therefore a cost subject which must carry its rightful share of the total costs. Special characteristics of a job costing system are the large amount of administrative work involved in a costing system involved in gathering the information on each task and the phenomenon that the flow of costs does not allow a fixed pattern but varies from task to task. (5)

[25]

TOTAL: 100

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