higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T1420**(E)**(A2)T

NATIONAL CERTIFICATE

PRODUCTION AND QUALITY CONTROL N5

(8140055)

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09:00–12:00

This question paper consists of 6 pages.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
PRODUCTION AND QUALITY CONTROL N5
TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Clearly show calculations and round off answers to TWO decimal places.
5. Rule off on completion of each question.
6. Write neatly and legibly.

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QUESTION 1

Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question number (1.1–1.14) in the ANSWER BOOK.

1.1 The resource-requirements plan is to the production plan what the rough-cut capacity plan is to the …

A master production schedule.
B material-requirements plan.
C shop-floor control.
D capacity-requirements plan.

1.2 Which ONE of the following is a medium-term capacity plan:

A Rough-cut capacity plan
B Capacity-requirements plan
C Input-output control
D Resource-requirements plan

1.3 Having insufficient capacity will most likely result in ...

A higher work-in-progress.
B lower customer service.
C frustrated workers.
D All of the above

1.4 Productivity can be defined as ...

A production rate.
B throughput.
C output over input.
D efficiency and effectiveness.

1.5 If the utilisation and efficiency of a department are both 85%, the productivity of the department ...

A will also be 85%.
B will be more than 85%.
C will be less than 85%.
D cannot be calculated without having more information.

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1.6 Assume that during a 10 hour shift, a work centre is idle for two hours and during the other eight hours completes an operation which has a standard time of seven hours.

The utilisation of that work centre is …

A 20%.
B 80%.
C 70%.
D 87,5%.

1.7 The capacity of a manufacturing factory is 100 car tyres per hour. If the monthly production plan is for 40 000 car tyres and the manufacturing waste factor is 5%, the load on the factory for the month will be ... hours.

A 400
B 420
C 440
D 460

1.8 An advantage of a make-to-order manufacturing policy is …

A better quality.
B greater stakeholder satisfaction.
C faster delivery to customers.
D lower inventory costs.

1.9 A work centre has an actual input of 70 hours per week over a four-week period. The actual outputs over this period were 65, 67, 71 and 73 hours. The work-in-progress (WIP) at the end of the four-week period is … hours.

A 2
B 4
C 6
D 3

1.10 Which ONE of the following provides the primary input to production-activity control:

A Customer orders
B Production schedule
C Manufacturing orders
D Master production schedule

1.11 The time taken to get a machine ready for production is known as ... time.

A setup
B run
C lead
D external

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1.12 The main purpose of the ABC inventory-classification system is to …

A list stock items alphabetically.
B focus attention on the most valuable stock items.
C release the most expensive stock items first.
D prioritise the ordering of stock.

1.13 A point-of-use storage system would probably have the advantage of …

A improving quality.
B reducing lead times.
C reducing stock losses.
D lowering manufacturing costs.

1.14 The term *expediting* describes …

A speeding up production to meet delivery dates.
B slowing down production to prevent bottlenecks.
C returning damaged raw materials to a supplier.
D rerouting jobs to avoid bottlenecks.

(14 × 2) **[28]**

QUESTION 2

2.1 A work centre operates for 15 hours per day, six days a week with an utilisation of 80%. On average, the work centre takes 6% longer to complete orders than the standard time.

What is the rated capacity of the work centre? (5)

2.2 Complete the following capacity report for a work centre (show deficits in brackets):

	WEEK 1	WEEK 2	WEEK 3	WEEK 4
Standard hours required	102	95	92	90
Available hours	96	96	96	88
Daily excess/(deficit) in hours				
Cumulative excess/(deficit) in hours				

Is this work centre balanced over the four weeks? Explain the answer. (10)

2.3 List FIVE ways in which capacity and load can be balanced. Also state whether each is a *capacity response* or a *load response*. (5 × 2) (10)
[25]

QUESTION 3

3.1 List FOUR elements of lead time found within manufacturing companies. (4)

3.2 Explain the term *make-to-order manufacturing policy* and give ONE advantage and ONE disadvantage of this approach. (4)

3.3 A project is planned as follows:

ACTIVITY	DURATION	DETAILS
A	4 days	
B	3 days	Depends on A
C	4 days	Depends on A
D	2 days	Depends on B
E	4 days	Depends on C
F	2 days	Depends on E
G	3 days	Depends on E

Prepare a Gantt chart to determine the overall length of the project. (10)

3.4 Name THREE performance measurements that are important to ensure control on the factory floor. Explain a consequence of not meeting performance standards in each case. (3 × 2) (6)

[24]

QUESTION 4

4.1 Assume that the annual demand for a component is 5 000 units. The ordering cost is R27 per unit, the inventory holding cost is 30% and the unit cost is R1 000.

Calculate the economic order quantity (EOQ) using the following formula:

$EOQ = \sqrt{(2DS/IC)}$ (5)

4.2 Explain FIVE precautions to ensure the physical control of inventory. (5)

4.3 Name FIVE aspects of a business that inventory management seeks to optimise. (5)

4.4 Differentiate between the *LIFO* and *FIFO* methods of evaluating inventory and give ONE advantage and ONE disadvantage of each method. (8)

[23]

TOTAL: 100

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