

NATIONAL CERTIFICATE CHEMICAL PLANT OPERATION N5

(8050015)

15 April 2021 (X-paper) 09:00-12:00

Nonprogrammable calculators and drawing instruments may be used.

This question paper consists of 4 pages and 1 addendum.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
CHEMICAL PLANT OPERATION N5
TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

- 1. Answer all the questions.
- 2. Read all the questions carefully.
- Number the answers according to the numbering system used in this question paper.
- 4. Sketches must be large, neat and fully labelled.
- 5. Write neatly and legibly.

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QUESTION 1

Complete the sentences by writing the missing word or words next to the question number (1.1–1.5) in the ANSWER BOOK.

- 1.1 The saturation temperature depends on the ... exerted on the surface of the water.
- 1.2 In axial-flow turbines, steam flow is ... to the turbine axis.

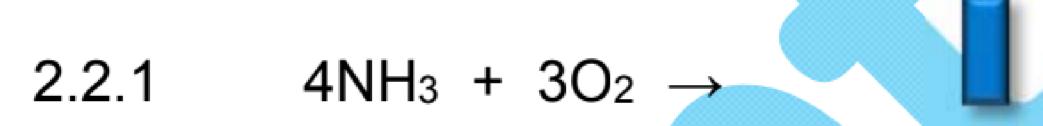


- 1.3 Steam turbines consist of nozzles and ...
- 1.4 Nozzle-mix burners mix ... and gas at the burner tile.
- Equilibrium is an inverse function of ... and a direct function of the O_2/SO_2 ratio.

 (5×1) [5]

QUESTION 2

- 2.1 State the specific procedure used for solving material balance problems. (5)
- 2.2 Complete the reactions:



2.2.2 NaNO₃ +
$$H_2SO_4$$
 \rightarrow (2 × 2) (4)

- 2.3 Name SIX mixers and what they are used for. (12)
- 2.4 Explain the advantages and disadvantages of closed-circuit gas turbines. (4) [25]

QUESTION 3

3.1 Write brief notes on:

3.2 Name FIVE factors that affect the efficiency of the cyclone. (5) [22]

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