higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

PROCESS TECHNOLOGY
NQF LEVEL 2

(6050342)

27 February 2018 (X-Paper)
09:00–12:00

This question paper consists of 4 pages.

NCV

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. Start each question on a NEW page.
5. Write neatly and legibly.

NCS

QUESTION 1

Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'true' or 'false' next to the question number (1.1–1.5) in the ANSWER BOOK. Correct the statement if it is FALSE.

1.1 One of the ways to present pipe routing in a process plant is by using colour coding.

1.2 Epoxy powder is used for pipe coating against thermal insulation.

1.3 Friction is the resistance to the start of motion in a valve.

1.4 Casing is a rotating component of a pump.

1.5 A water reservoir is a hole closed with a removable lid big enough for a person to enter if necessary.

(5 × 2) **[10]**

QUESTION 2

2.1 What is the purpose of line breaking on the process flow diagram? (2)

2.2 Explain the function of a process controller in a plant. (2)

2.3 Draw each of the following equipment symbols:

2.3.1 Rotary pump

2.3.2 Screen

(2 × 2) (4)

2.4 Differentiate between *reducers* and *enlargers*. (2 + 2) (4)

2.5 What is the function of pipeline supports? (2)

2.6 Explain the anaerobic treatment of solids in a water treatment plant. (6)

2.7 List FOUR basic components of vibrating screens. (4)

[24]

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QUESTION 3

3.1 List FIVE applications of diaphragm pumps. (5)

3.2 Describe ways of inspecting and finding faults in pumps. (8)

3.3 Explain the causes of excessive vibrations in pumps. (3)

3.4 Define a *blow tank.* (2)
[18]

QUESTION 4

4.1 Give FOUR disadvantages of drums. (4)

4.2 Write brief notes on dip tape. (5)

4.3 Name FOUR containers for storing bulk solid materials. (4)

4.4 Explain how permeability of a material is determined. (2)

4.5 Give THREE typical examples of materials stored in reclamation piles. (3)
[18]

QUESTION 5

5.1 List EIGHT components of a filter press. (8)

5.2 Explain the function of each of the following in cyclones:

5.2.1 Junk traps

5.2.2 Dip leg purges

5.2.3 Flapper valve

(3 × 2) (6)

5.3 Explain each of the stock properties below as they are used in determining the separation efficiency of cyclones:

5.3.1 Stock viscosity

5.3.2 Presence of air

(2 × 3) (6)

5.4 Explain the only way of producing crystals in a solution. (2)

5.5 List SIX components of a Swenson-Walker adiabatic cooling crystalliser. (6)

5.6 Define the term *concentration*. (2)
[30]

TOTAL: 100

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