higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

PULP AND PAPERMAKING TECHNOLOGY
NQF LEVEL 2

(6050372)

12 November 2024 (Y-paper)
13:00–16:00

This question paper consists of 6 pages.

103Q1N2412

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)
PULP AND PAPERMAKING TECHNOLOGY
NQF LEVEL 2
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. Only use a black or blue pen.
6. Write neatly and legibly.

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QUESTION 1

Indicate whether the statements are TRUE or FALSE by writing 'True' or 'False' next to the question number (1.1–1.5) in the ANSWER BOOK.

1.1 The purpose of coating is to increase the density, smoothness and gloss of paper.

1.2 More water is removed during forming than during drying.

1.3 During evaporation, salt is removed and liquid remains behind.

1.4 Chemical pulping breaks down fibres.

1.5 Felling can be done by using axes or saws only.

(5 × 1) **[5]**

QUESTION 2

Choose a term from COLUMN B that matches a description in COLUMN A. Write the letter (A–G) next to the question number (2.1–2.5) in the ANSWER BOOK.

COLUMN A		COLUMN B	
2.1	The natural colour of cellulose	A	laminar
2.2	Water recycle from the thickener back to the showers	B	cutting
		C	green
2.3	Equipment used to separate dust from the gas stream	D	white
2.4	The separation of layers	E	hot loop
2.5	Operation which reduces the continuous webs of paper, coming from the rolls to specified sizes of separate sheets	F	trimming
		G	cyclone

(5 × 1) **[5]**

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QUESTION 3

Give ONE term for each of the descriptions by writing it next to the question number (3.1–3.5) in the ANSWER BOOK.

3.1 A type of cone bearing trees.

3.2 A type of digester that cooks one load of chips at a time

3.3 Process that converts the chemical produced by the digestion process back into cooking liquor

3.4 The removal of residual water from the sheet after having passed through the wet end of the paper, board or tissue machine

3.5 A process in which rolls are prepared for shipment

(5 × 1) **[5]**

QUESTION 4

4.1 Name FOUR Nampak packaging groups in South Africa. (4)

4.2 Define *fluting*. (2)

4.3 Describe the screening process as a method used to remove contraries from secondary fibre. (4)

4.4 List THREE properties of fibres. (3)

4.5 Name FOUR methods used to extract logs from plantations. (4)

[17]

QUESTION 5

5.1 Define *tearing strength*. (2)

5.2 Explain how you would measure the bending stiffness of paper. (2)

5.3 List SIX criteria that are used to grade paper. (6)

5.4 Describe in sequence the SIX steps used for the removal of remaining pith from bagasse. (6)

5.5 Name the equipment that is used during the processes associated with bagasse for FOUR marks. (4)

[20]

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QUESTION 6

6.1 List FIVE basic components of the pressure groundwood system. (5)

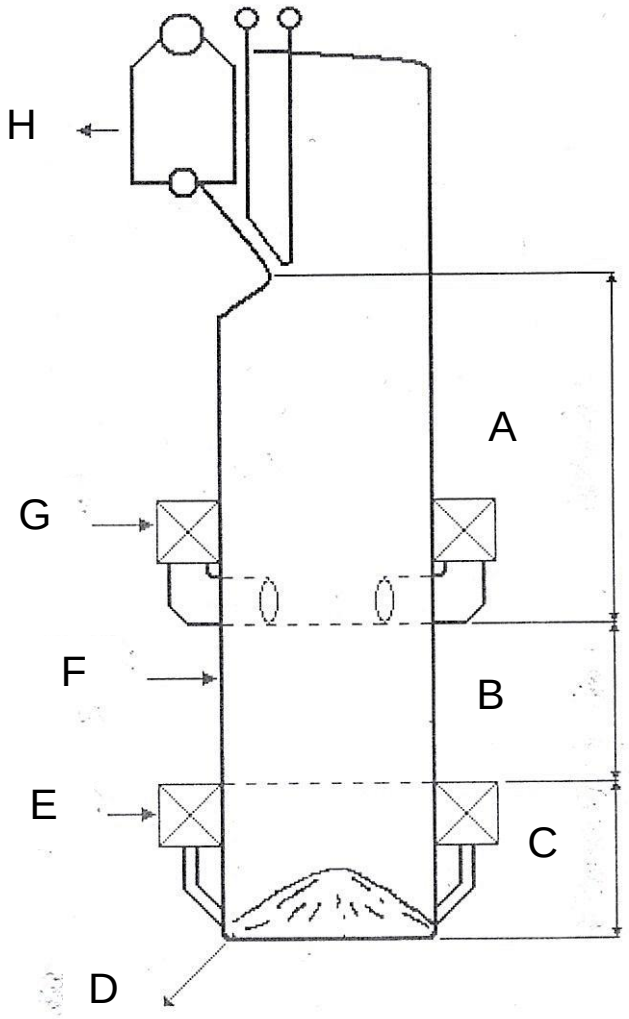
6.2 Hydrogen sulphide produced during black liquor oxidation has a very bad smell, like that of a rotten egg.

How would you treat black liquor to prevent this smell? (2)

6.3 Define *soda pulping process*. (2)

6.4 State THREE negative impacts of not using a sharpened pulp stone during grinding. (3)

6.5 Study the diagram of reactions that take place inside a recovery furnace in the FIGURE below. Name the labelled components by writing the answer next to the letter (A–H) in the ANSWER BOOK.



(8)

6.6 List FOUR steps for the production of sodium sulphite in the correct sequence. (4)

[24]

QUESTION 7

7.1 State FIVE disadvantages of roll formers. (5)

7.2 List FIVE papermaking processes or systems. (5)

7.3 Explain the working principles of sheet formation (phase 2) of a Fourdrinier table. (2)

7.4 What is the purpose of trimming or guillotining the paper before it is delivered to the customer? (2)

7.5 State FIVE advantages that water-borne adhesives can offer in inflexible packaging laminating applications. (5)

7.6 What are the TWO most common product combinations in wax lamination? (2)

7.7 List THREE printing processes that are used for commercial printing. (3)

[24]

TOTAL: 100

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