higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

PULP AND PAPERMAKING TECHNOLOGY
NQF LEVEL 2

7 NOVEMBER 2022

This marking guideline consists of 5 pages.

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SECTION A

QUESTION 1

1.1 A
1.2 A
1.3 D
1.4 B
1.5 A
1.6 C

(6 × 1) **[6]**

QUESTION 2

2.1 D
2.2 F
2.3 A
2.4 J
2.5 B
2.6 K

(6 × 1) **[6]**

QUESTION 3

3.1 True
3.2 True
3.3 False
3.4 True
3.5 False
3.6 True
3.7 True
3.8 True
3.9 False

(9 × 2) **[18]**

TOTAL SECTION A: 30

SECTION B

QUESTION 4

4.1
- Office buildings
- Larger retail stores
- Transport terminals
- Larger city waste dumps (Any 2 × 1) (2)

4.2 Cellulose fibres that come from waste paper collected for recycling or used fibrous material. (2)

4.3
- Contraries that are part of the original product like staples in magazines.
- Contraries that are part of the bales – waste that was compressed into bales at municipal dumping sites.
- Contraries that are included to make the bale heavier since bales are paid for according to weight. (3 × 2) (6)

4.4
- Brown liner
- White top liner
- Test liner
- Fine paper (4)

4.5
- Fibre furnish: using shorter and finer fibres increases smoothness.
- The level of filler addition: the filler pigment fills in the spaces and fibre in the sheet surface.
- The type of Fourdrinier wire and press felts used.
- The degree of pressing and calendaring.
- The surface smoothness of the press and dryer rolls.
- Finishing operations like sizing and coating.
- Degree of refining.
- Moisture content: the paper becomes more compressible as its moisture content increases, resulting in greater smoothness.
- The compressibility of the paper plays a role in the printing process.

(Any 5 × 1) (5)

4.6
- Books
- Magazines
- Newspapers
- Gift wrapping
- Pamphlets
- Greeting cards and envelops (Any 1 × 1) (1)

[20]

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QUESTION 5

5.1 5.1.1 Logs are stored in two ways – ponding and cold decking.✓ When ponding is used logs are submerged in water to protect them from drying, insects and fungi.✓✓ Some parts of logs stored in ponds that are above water may develop drying defects.✓ (4)

5.1.2 End checking will expose logs to attacks by insects and fungi if stored for too long during warm weather. Cold-deck storage logs are occasionally sprayed with water to keep them wet reducing the defects caused by shrinkage. (2)

5.2 5.2.1 It removes contraries from the bagasse before depicting. (2)

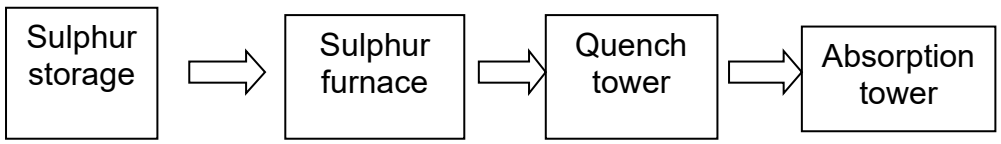
5.2.2 Controls the amount of bagasse fed to the process. (2)

5.3 A – Storage bin
B – Primary pressure refiner
C – Secondary refiner
D – Latency chest
E – Primary pressure screens
F – Thickener
G – Storage
H – Rejects system
I – Rejects
J – Effluent (10)
[20]

QUESTION 6

6.1
- Avoid excess air in the furnace.
- Keep the furnace temperature as high as possible.
- Use refractory lined piping since iron is a catalyst for SO_3 formation.
- Cool the gas very rapidly since SO_3 forms at between 600 to 900 °C. (4)

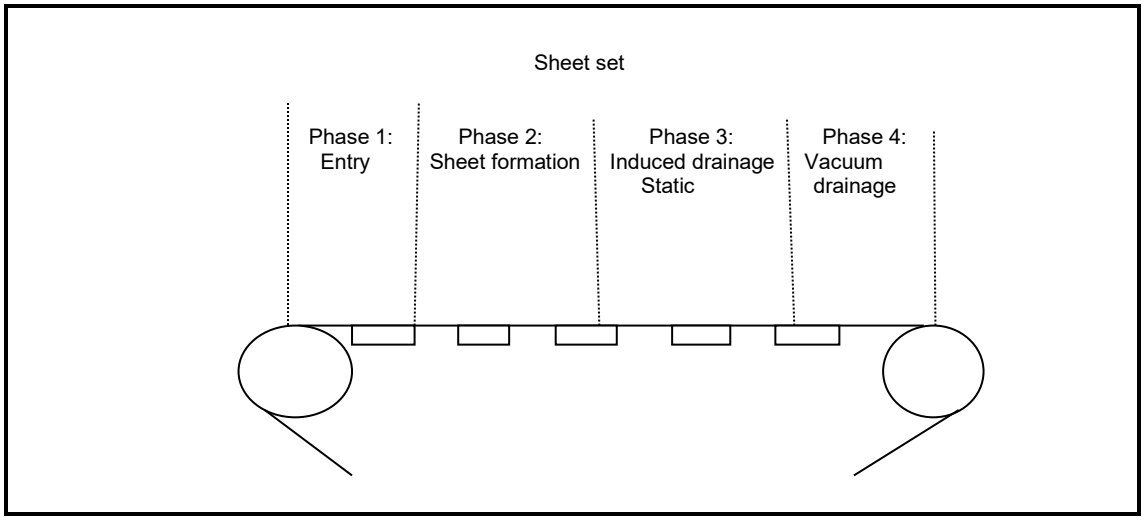
6.2



(4)

6.3 $Na_2S + 2O_2 \longrightarrow Na_2SO_4$ (2)

6.4



(4)

6.5
- To remove water from the sheet and consolidate the sheet.
- To provide favourable sheet properties.
- To improve wet web strength in order to ensure good runnability in the dryer section. (3)

6.6
- Improved paper quality
- Good formation
- Less linting of sheet
- Two sidedness much improved
- Increased drainage capacity
- Affordable installed cost for retrofits
- Fewer stationary vacuum units (Any 3 × 1) (3)

[20]

QUESTION 7

7.1 The purpose of trimming is to trim the rough size of a sheet of paper to the final size.✓ One, two or three reams are placed on the guillotine trimmer bed and each side is trimmed.✓ The adjustments for the exacts size to be trimmed are made either manually✓ or automatically by using adjustable bars that have been set up with the exact trim for each cut.✓ (4)

7.2
- Logo or address embosser
- Custom artwork embosser
- Plastic hand-held or desk embosser
- Medal embosser
- Elastic embosser (Any 3 × 1) (3)

7.3
- Weighing
- Wrapping
- Labelling (3)

[10]

TOTAL SECTION B: 70
GRAND TOTAL: 100

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