higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

PULP AND PAPERMAKING TECHNOLOGY
NQF LEVEL 2

XX February 2020

This marking guideline consists of 5 pages.

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QUESTION 1

1.1 False
1.2 False
1.3 True
1.4 True
1.5 True

(5 × 1) **[5]**

QUESTION 2

2.1 F
2.2 C
2.3 D
2.4 G
2.5 E

(5 × 1) **[5]**

QUESTION 3

3.1 Wet-strength paper
3.2 Pulping
3.3 Sodium sulphite
3.4 Dry end
3.5 Bowls

(5 × 1) **[5]**

TOTAL SECTION A: 15

QUESTION 4

4.1
- Reducing the amount of water released by recycling and reusing it in the plant
- Treating effluent to contain fewer harmful substances (2)

4.2
- Hardwood
- Softwood (2)

4.3 Dirty water (1)

4.4
- Metals
- Glass
- Textiles
- Wood
- Sand
- Plastics
- Building materials
- Synthetic paper (Any 4 × 1) (4)

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4.5
- Chutes,✓ which allow the logs to roll down a hill onto a pile.✓
- Tractors and trailers,✓ which pile the logs.✓
- Skidding,✓ which is the use of animals or motorised equipment to pull logs out of the forest.✓
- Cable yarders,✓ which work like cable slides onto which logs are clamped and then slid down-hill while attached to a cable.✓ (4 × 2) (8)

[17]

QUESTION 5

5.1
- Weight
- Colour
- Usage
- Raw materials
- Surface treatment
- Finish (Any 3 × 1) (3)

5.2 Specular reflection is the mirror-like reflection of light from a surface where light from a single incoming direction is reflected into a single outgoing direction,✓✓ while diffuse reflection is the reflection from a rough or uneven surface in which light from a single source is reflected in many directions.✓✓ (2 + 2) (4)

5.3
- Brown liner
- White top-liner
- Test liner (3)

5.4
- A cyclone (cleaners) separates the grit and other solids from the bagasse steam.
- Bagasse is fed into a slurry pulper where dilution water is added to form bagasse slurry.
- Slurry is pumped to the rock cyclone where sand, stones and other impurities are removed from the bottom of the cyclone.
- Clean bagasse leaves the rock cyclone through the top outlet, from where it is distributed to the wet depithers.
- Clean bagasse is then transported to the digester via the clean fibre collection conveyor and digester feed conveyor.
- Bagasse is fed into a pressurised horizontal continuous digester. (6)

5.5 To ensure that fibre stock is available even in times when collection is discontinued (2)

5.6 Bales are secondary fibres that have been compressed into squares. (2)

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QUESTION 6

6.1
A Grinders
B Bull screen
C Primary pressure screens
D Accepts chest
E Thickener
F Groundwood rejects system
G Secondary screens/refiners/cleaners
H Effluent (8 × 1) (8)

6.2
- Steaming vessel
- Primary and secondary refiners
- Latency treatment
- TMP rejects system (4)

6.3
- Apart from recovery valuable cooking chemicals, the burning of organic materials generates enough steam to meet internal mill requirements and generates some additional electricity.
- It removes soap in black liquor to produce tall oil.
- It limits mill emissions to a small amount of solid waste and some harmless odourless gases. (3)

6.4 The final effect can operate below atmospheric pressure. (1)

6.5 Steam economy is defined as the ratio of mass of water evaporated to the mass of steam that enters the system. (2)

6.6
- Drying zone
- Reducing zone
- Oxidising zone (3)

6.7
- Lower capital cost
- Lower operation cost
- Takes up less space
- Simple to start up, operate and shut down
- Safer to operate (Any 3 × 1) (3)

[24]

QUESTION 7

7.1
- Head box
- Forming
- Pressing
- Drying (4)

7.2 7.2.1 Sheet formation starts with low drainage to prevent fibre loss, but with sufficient agitation to prevent flock formation.

7.2.2 The stock impinges onto the wire or fabric to start forming a mat without sealing the sheet or causing excessive loss of fines or loading.

(2 × 2) (4)

7.3
- Better formation
- Less linting of sheet
- Improved two-sidedness
- Increased drainage capacity/speed (4)

7.4
- Logo/Address embosser
- Custom-artwork embosser
- Plastic hand-held/desk embosser
- Metal-handled embosser
- Electric embosser (5)

7.5
- Sheet moisture content
- Sheet structure
- Engraving-roll temperature
- Speed of embossing machine (4)

7.6
- Production winder or actual winder
- Salvage winder or rewinder (2)

7.7 To ensure that only quality paper is dispatched to clients (1)

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TOTAL SECTION B: 85
GRAND TOTAL: 100

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