higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

PROCESS CHEMISTRY
NQF LEVEL 2

XX November 2023

This marking guideline consists of 5 pages.

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SECTION A

QUESTION 1

1.1 True
1.2 True
1.3 False
1.4 True
1.5 True

(5 × 1) **[5]**

QUESTION 2

2.1 G
2.2 H
2.3 A
2.4 K
2.5 B
2.6 C
2.7 J
2.8 D
2.9 I
2.10 E

(10 × 1) **[10]**

QUESTION 3

3.1 Electrolysis
3.2 Nitrogen
3.3 Haber process
3.4 Smelting
3.5 Diatom

(5 × 1) **[5]**

TOTAL SECTION A: 20

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SECTION B

QUESTION 4

4.1 4.1.1
- Adhesives
- Detergents
- Lubricants
- Solvents
- Plastics (Any 3 × 1) (3)

4.1.2 Hydrocarbons are compounds that are mainly composed of carbon✓ and hydrogen.✓ (2)

4.2 Recovering coal underground is a complicated mining method that uses deep shafts dug underground✓ with a network of connecting tunnels leading to the coal beds.✓ The coal is removed with shovels or explosives✓ and packed on carts, trucks or a conveyer belt that takes the coal to the surface.✓ (4)

4.3
- De Beers
- Mintek
- Zinchem
- Consol Glass (4)

4.4
- Base metals are more commonly found metals and are known to react easily with oxygen.
- Precious metals are harder to find in nature, which makes them more valuable. (2)

[15]

QUESTION 5

5.1
- Pre-treatment
- Primary sedimentation
- Activated sludge treatment
- Disinfection
- Solid treatment (5)

5.2 5.2.1 Flash mixing is the rapid mixing of water with a chemical flocculent✓ to ensure that the flocculent is thoroughly mixed with the water.✓ The process takes place in a tank with a propeller turning at a high speed.✓ (3)

5.2.2 Filtration is a process through which water is passed through a porous or an open-textured medium✓ in order to remove suspended or colloidal matter✓ by retaining those suspended particles on the pores or the surface of the filtering medium.✓ (3)

5.3 It is the progress that meets the needs of today✓ without causing permanent damage for future generations.✓ (2)

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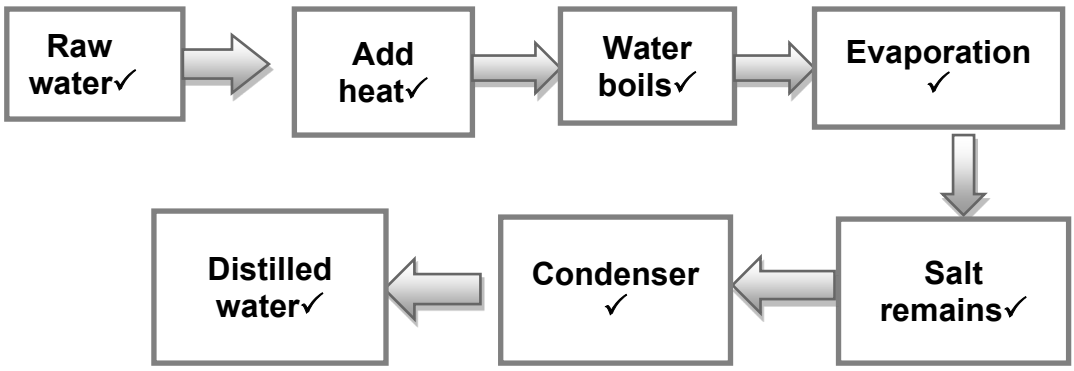
5.4



(7 × 1) (7)

5.5
- Manufacture of hydrogen chloride
- Manufacture of organic chemicals
- Rocket fuel
- Manufacture of margarine
- Reducing agent
- Synthesis of ammonia through the Haber process
- Petroleum refining
- Cooling agent

(Any 5 × 1) (5)
[25]

QUESTION 6

6.1
- Pollution
- Dangerous working conditions
- Money goes to select few
- Danger of overdeveloping and spoiling South Africa's natural beauty (4)

6.2
- Helium
- Argon
- Krypton
- Xenon (4)

6.3 It is the process of turning gas into a liquid state. (2)

6.4
- Gas-releasing agents
- Physical property-changing agent
- Solution agents (3)

6.5 Conditioning is the final step in the glass melting process.✓ This process is usually performed towards the end of the furnace✓ and can be some form of cooling glass so that it can be formed into the desired product.✓ Conditioning is very important, because it is the step of the glassmaking process in which the temperature of the glass is blended, resulting in only one temperature.✓ This is critical, as glass products made from glass with differing temperature tend to be very weak.✓ (5)

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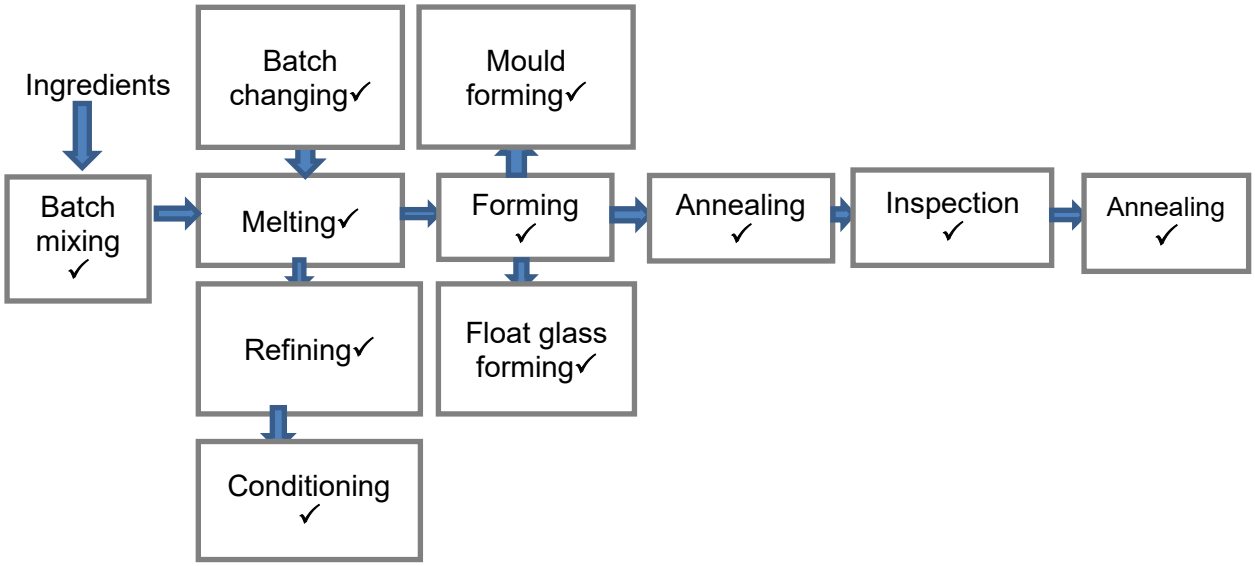
6.6



(12)
[30]

QUESTION 7

7.1
- Firefighting equipment
- First-aid gear
- Eye wash fountains
- Immersion shower (4)

7.2 Volatility refers to how easily substances can become a vapour.✓ Liquids with high vapour pressure are more volatile than liquids with low vapour pressure.✓ Because most vapours ignite easily,✓ a liquid that is highly volatile must be handled with care in order to prevent fires or explosions.✓ (4)

7.3 7.3.1 Overalls are worn when the label indicates the requirements for full body protection.

7.3.2 A face shield protects the face when working with chemicals and against any airborne particles or objects.

(2 × 1) (2)
[10]

TOTAL SECTION B: 80
GRAND TOTAL: 100

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