

EXTERNAL INTEGRATED SUMMATIVE ASSESSMENT

CANDIDATE INFORMATION

SURNAME	
NAMES	
ID NUMBER	
EISA REGISTRATION NUMBER	
ASSESSMENT CENTRE	
ASSESSMENT CENTRE ACCREDITATION NUMBER	

QUALIFICATION INFORMATION

QUALIFICATION TITLE	INTERMEDIATE OCCUPATIONAL CERTIFICATE: BAKING AND CONFECTIONERY OPERATOR
SAQA ID	121147
NQF LEVEL	3
CREDITS	123
DURATION	2 hrs 00min

TOTAL MARKS	100
PASS MARK	50 Marks
DATE OF EISA	

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QUESTION 1:

SECTION 1.1: BREAD LINE A - PRODUCTION SHIFT END REPORT

- **Shift:** Day Shift (⁰⁶ : 00 to ¹⁴ : 00)
- **Date:** 15 October 2026
- **Supervisor:** John Khumalo (Shift Supervisor)

- **Operator:** Sipho Ndlovu (Baking Operator)
- **Target Output:** 5 000 loaves of white bread
- **Actual Output:** 4 200 loaves of white bread
- **Under-production Variance:** -800 loaves
- **Waste / Discarded:** 300 burnt loaves (thrown away)
- **Incident Summary:** At 09 : 00 , the oven conveyor belt got stuck. Operator Sipho Ndlovu did not report this to Supervisor John Khumalo immediately. Sipho spent 45 minutes trying to fix the conveyor belt himself. When he could not fix it, he finally called the maintenance team at 09 : 45 . The maintenance team resolved the mechanical fault within 15 minutes . Because the conveyor belt was stopped while bread was still inside, 300 loaves were completely burnt.
- **Shift Administration Note:** Sipho completed and submitted this written production logbook report at 14 : 45 (45 minutes after the shift had officially ended) because he was busy cleaning the workspace.

1.1.1 Identify two (2) specific communication failures committed by Sipho (the operator) based on the Shift End Report, and describe one (1) direct consequence of these failures on the shift's production volume. (3)

1.1.2 Explain two (2) ways in which Sipho's decision to hide the mechanical problem and attempt to fix it himself damages teamwork and trust between the operator and the shift supervisor. (2)

1.1.3 State three (3) distinct administrative or operational reasons why it is essential for the business administration of the bakery to have the production report completed and submitted immediately at the end of the shift (^{14 : 00}) instead of ^{45 minutes} late. (3)

SECTION 1.2:

WORKPLACE SCENARIO: MIXING AREA INCIDENT

During the Day Shift, raw material handler Maria was preparing flour and yeast for the next mixing batch. While carrying an open plastic scoop of yeast, she bumped into a table and dropped the scoop onto the concrete floor. The yeast spilled onto the floor.

Maria picked up the spilled yeast from the floor with her bare hands, put it back into the scoop, and poured it directly into the mixer bowl. She did not wash or sanitise her hands or the scoop. Later during the shift, a water pipe near the mixing area started leaking, creating a large puddle of water on the floor. Maria noticed the water but did not put up a warning sign or clean it up.

1.2.1 Identify which one (1) Food Safety system or standard from the options below was directly violated when Maria returned the dropped yeast to the mixer bowl, and write one (1) sentence explaining why your chosen option is correct. (2)

- **A.** First-In-First-Out (FIFO) stock rotation system
- **B.** Hazard Analysis Critical Control Point (HACCP) hygiene and hazard control
- **C.** Allergen separation standards
- **D.** Scale calibration and weight control

ANSWER

1.2.2

1. List three (3) specific quality control checks or measures that the operator must perform during the dough mixing stage to make sure every batch is consistent. (3)

2. Explain three (3) reasons why keeping written records of these quality checks helps the factory maintain consistent product quality over time. (3)

- 1.2.3** Identify three (3) Good Manufacturing Practice (GMP) hygiene or safety rules that Maria broke during her shift in the mixing area. (3)

1.2.4

1. State one (1) specific type of food contamination that occurred when Maria picked the yeast up from the floor with her bare hands and put it into the mixer. (1)

2. Explain three (3) ways this specific contamination could harm the consumer who buys and eats the bread. (3)

1.2.5 Describe three (3) consecutive cleaning and sanitizing steps Maria should have taken to correctly clean and sanitize the plastic scoop after it fell on the floor, before using it to measure ingredients again. (3)

QUESTION 2:

SECTION 2.1:

2.1.1 Explain one (1) primary operational role of an industrial mixer in a plant bakery, and explain one (1) way in which mixing speed directly affects the physical development of the dough. (2)

2.1.2 State two (2) environmental factors (parameters) controlled by proving equipment (the proofer), and outline how they cooperate to make the dough rise. (2)

2.1.3 Explain one (1) operational role of lidding (putting lids on baking pans) in the production of sandwich bread, and describe one (1) physical defect that occurs in the final shape of the loaf if a lid is not placed correctly. (2)

2.1.4 Describe one (1) key difference in the operating principles between a tunnel oven and a deck oven, and state one (1) operational reason why a tunnel oven is better suited for a high-volume plant bakery. (2)

SECTION 2.2:

2.2.1 Identify four (4) operational or quality reasons why baked bread must be cooled down using cooling equipment before it is sent to the slicing and packaging machines. (4)

2.2.2 Describe four (4) sequential steps of how flour proteins (glutenin and gliadin) react with water and mechanical mixing to form a gluten network, and explain why this network is essential for the final structure of the bread. (4)

2.2.3 Explain four (4) sequential biological or chemical steps that yeast undergoes during the proofing stage to increase the physical volume of the dough. (4)

2.2.4 Identify and describe four (4) distinct physical or chemical transformations that happen to the dough structure inside the oven during the baking process. (4)

QUESTION 3:

3.1.1 Identify two (2) separate actions an operator must perform to prepare raw material sampling equipment before taking a sample to ensure that the sample does not become contaminated.

(2)

3.1.2

1. Explain one (1) main quality reason why an operator must take a sample of flour from a bulk delivery truck before unloading it into the bakery storage silos, and (1)

2. List four (4) physical quality characteristics that the operator must check during this sampling process. (4)

3.1.3 For each of the following three (3) raw material grades, state the standard color label and the immediate warehouse action you must take:

1. **Accepted** (1)

Quarantined / On Hold (2)

3. **Rejected** (2)

3.1.4 List four (4) step-by-step cleaning and sanitizing steps, in the correct operational sequence, for a stainless steel sampling scoop to prevent biological contamination of raw materials.

(4)

3.1.5 According to standard operating procedures (SOPs), identify four (4) critical pieces of information that the operator must write down on the raw material sampling log sheet when a sample is taken.

(4)

3.1.6 Once the quality control laboratory approves a raw material sample, list four (4) formal warehouse or administrative steps required to release the material from the receiving area so it can be moved to active production.

(4)

QUESTION 4:

**OPERATIONAL SCENARIO: STAND-ALONE SPIRAL MIXER OPERATIONAL
FAULT**

You are the assigned operator for the Stand-alone Spiral Mixer (Model SM-120). Your shift starts at 06:00. The Standard Operating Procedure (SOP) requires a complete pre-start safety and mechanical check before turning on the machine.

During the second production batch of the day, you notice that the mixing bowl is making a loud, high-pitched squealing sound, and the electric motor housing feels much hotter to the touch than usual.

SECTION 4.1:

4.1.1 Outline three (3) critical pre-start safety and mechanical checks you must perform on the single-stage Spiral Mixer before you turn on the power. (3)

4.1.2 Identify four (4) key operational areas or control parameters (such as timer, speed settings, safety guards, or control panels) that you must check and monitor immediately after starting the Spiral Mixer to ensure it is running correctly. (4)

4.1.3 Describe the complete operational cycle for the Spiral Mixer (Model SM-120) by listing ten (10) sequential steps, starting from the preparation and loading of raw ingredients to discharging the mixed dough. (10)

As the operator, you are required to apply the correct shutdown procedures to ensure employee safety, equipment protection, and compliance with bakery operating standards.

4.2.1 Identify five (5) step-by-step emergency shutdown and electrical isolation actions that an operator must perform on the Spiral Mixer when a major mechanical or electrical fault (such as the squealing noise and hot motor) is discovered. (5)

4.2.2 Identify four (4) post-shutdown tasks that you must complete at your workstation after turning off the Spiral Mixer before your shift ends or before the maintenance team arrives. (4)

QUESTION NUMBER	MAXIMUM MARKS
Question 1	26
Question 2	24
Question 3	24
Question 4	26
GRAND TOTAL	100
PERCENTAGE	100%

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QUESTION 1: COMMUNICATION, WORKPLACE RELATIONS, AND QUALITY MANAGEMENT

[TOTAL MARKS: 26]

SECTION 1.1: Business Communication, Interpersonal Relations, and Administration

1.1.1 [3 Marks]

- **Expected Answer:**

- **Two (2) Communication Failures (1 mark per point; max 2 marks):**

1. Siphso failed to report the conveyor belt jam to his supervisor, John, immediately when it occurred at ^{09 : 00} .
2. Siphso failed to communicate with the maintenance department immediately, waiting ^{45 minutes} before calling them at ^{09 : 45} .

- **One (1) Direct Consequence (1 mark):**

- The delay caused the production line to remain down for much longer than necessary, resulting in an under-production variance of ⁻⁸⁰⁰ loaves of bread, and causing ³⁰⁰ loaves of bread to burn inside the oven.

1.1.2 [2 Marks]

- **Expected Answer (Any two (2) of the following for 1 mark each; max 2 marks):**

- Hiding the mechanical problem shows a lack of transparency, which breaks trust and makes the supervisor unable to rely on the operator's reports.
- Attempting to fix complex machinery alone bypasses standard plant hierarchy, showing a disregard for the supervisor's authority.
- It damages team collaboration because the supervisor cannot coordinate with other lines or adjust schedules to support the breakdown.

1.1.3 [3 Marks]

- **Expected Answer (Any three (3) of the following for 1 mark each; max 3 marks):**

- It ensures the incoming shift supervisor and operators receive accurate, real-time machine status and production totals during the handover.
- It allows the logistics and warehousing departments to immediately update raw material stock levels and adjust ingredient orders.
- It allows the costing department to trace material waste (such as the ³⁰⁰ burnt loaves) and account for financial losses without delay.
- It enables the production planner to schedule extra run time or adjust the schedule for the next shift to make up for the ⁻⁸⁰⁰ loaf shortfall.

SECTION 1.2: Food Safety, Quality Control, GMP, and Sanitation

1.2.1 [2 Marks]

- **Expected Answer:**

- **Correct Option: B** (Hazard Analysis Critical Control Point (HACCP) hygiene and hazard control) (1 mark).
- **One-sentence explanation (1 mark):** Maria violated HACCP principles because she introduced a biological hazard (bacteria and dirt from the floor and her bare hands) directly into food meant for human consumption.

1.2.2 [6 Marks]

1. **Three (3) Quality Control Checks (1 mark per correct check; max 3 marks):**

- Check ingredient weights using a calibrated scale before loading.
- Monitor water temperature (using a thermometer) to control yeast fermentation rate.
- Monitor mixing time (using a timer/stopwatch) to avoid under-mixing or over-mixing.

2. **Three (3) Reasons for Keeping Written Records (1 mark per correct reason; max 3 marks):**

- Records provide a history of the batch (traceability) to identify the root cause if quality problems are found later.
- It helps operators identify trends (e.g., if water temperatures are slowly rising across multiple shifts).
- It ensures accountability and standardises processing procedures across different operators and shifts.

1.2.3 [3 Marks]

- **Expected Answer (Any three (3) of the following for 1 mark each; max 3 marks):**
 - Maria did not wash or sanitise her hands after touching the floor before handling ingredients.
 - She did not clean or sanitise the measuring scoop after it touched the floor.
 - She recovered contaminated ingredients from the floor and placed them back into the active production batch.
 - She failed to report or clean up the leaking water pipe, which created a physical slip and fall hazard on the floor.

1.2.4 [4 Marks]

1. **Contamination Type (1 Mark):** Biological/Microbiological contamination (also accept physical contamination).
2. **Three (3) Ways Contamination Harms Consumers/Business (1 mark per point; max 3 marks):**
 - Pathogens (harmful bacteria like *Salmonella*, *E. coli*, or wild moulds) from the floor are introduced into the dough.
 - Although baking heat kills some bacteria, high levels of bacterial toxins may survive the heat and remain in the finished bread.
 - Consuming the bread could cause food poisoning, vomiting, or diarrhea in customers, leading to legal actions, customer complaints, and damage to the bakery's brand reputation.

1.2.5 [3 Marks]

- **Expected Answer (1 mark per consecutive step in sequence; max 3 marks):**
 1. **Step 1 (Wash/Clean):** Rinse the scoop in warm water and scrub with food-grade detergent to remove physical dirt and yeast residues.
 2. **Step 2 (Sanitise):** Submerge the scoop in an approved chemical sanitiser solution (or hot water above 77°C) for the recommended contact time to kill micro-organisms.
 3. **Step 3 (Dry):** Place the scoop on a clean, sanitised surface and allow it to air-dry completely before using it again.

QUESTION 2: BAKING AND CONFECTIONERY EQUIPMENT AND PROCESS TECHNOLOGY

[TOTAL MARKS: 24]

SECTION 2.1: Equipment Roles and Operating Principles

2.1.1 [2 Marks]

- **Expected Answer:**
 - **Operational Role (1 mark):** The industrial mixer blends separate ingredients into a uniform dough mass and stretches flour proteins to develop the gluten structure.
 - **Speed Effect (1 mark):** Low speed blends the ingredients together evenly, while high speed stretches and kneads the dough to develop elasticity.

2.1.2 [2 Marks]

- **Expected Answer:**
 - **Two (2) Environmental Factors (1 mark):** Temperature and Humidity (or Moisture).
 - **Cooperative Rising Action (1 mark):** Proving equipment maintains a warm temperature (typically 35°C to 43°C) to speed up yeast gas production, while high humidity (typically 80% to 85%) keeps the dough surface moist so it can expand without cracking.

2.1.3 [2 Marks]

- **Expected Answer:**
 - **Operational Purpose of Lidding (1 mark):** Lidding traps the rising dough and forces it to fill the square corners of the pan, producing flat-topped sandwich bread.
 - **Physical Defect (1 mark):** If the lid is not placed correctly, the bread will expand upward freely, forming a rounded, mushroom-shaped top instead of a flat sandwich shape.

2.1.4 [2 Marks]

- **Expected Answer:**
 - **Key Operational Difference (1 mark):** A tunnel oven uses a continuous conveyor belt to move dough slowly through heating zones, whereas a deck oven requires the operator to load and unload products manually onto static shelves.
 - **Operational Reason (1 mark):** A tunnel oven is continuous and automated, which allows for the high-volume, automated production of thousands of loaves without manual baking delays.

SECTION 2.2: Breadmaking Process and Technology

2.2.1 [4 Marks]

- **Expected Answer (Any four (4) of the following for 1 mark each; max 4 marks):**
 1. Slicing warm bread causes the blades to tear and crush the delicate internal crumb structure.
 2. Packaging warm bread releases hot steam inside the plastic bag, causing condensation which leads to rapid mould growth.
 3. Warm bread is too soft and will collapse or deform under the mechanical pressure of the wrapping machine.
 4. Cooling allows the internal starch structure to set (retrograde), making the loaf firm enough to slice and handle.
 5. It ensures the product reaches a safe core temperature before distribution to comply with quality standards.

2.2.2 [4 Marks]

- **Expected Answer (1 mark per point in sequence; max 4 marks):**
 1. Water is added to dry wheat flour to hydrate the glutenin and gliadin proteins.
 2. The mechanical action of the mixer stretches and folds these hydrated proteins.
 3. The stretched proteins link together chemically to form a continuous, elastic network called gluten.
 4. This gluten network is essential because it acts like an elastic balloon that traps carbon dioxide gas, giving bread its final rose structure.

2.2.3 [4 Marks]

- **Expected Answer (1 mark per point in sequence; max 4 marks):**
 1. Yeast (a living single-celled fungus) consumes simple sugars present in the dough.
 2. Through anaerobic respiration (fermentation), the yeast converts these sugars into carbon dioxide (CO_2) gas and alcohol.
 3. The produced CO_2 gas forms tiny bubbles inside the developed gluten matrix.
 4. As the gas pressure inside these bubbles increases, the bubbles expand, causing the physical volume of the dough to rise.

2.2.4 [4 Marks]

- **Expected Answer (1 mark per correct identified transformation and description; max 4 marks):**

1. **Oven Spring:** During the first few minutes in the oven, heat causes gas bubbles to expand rapidly and yeast to work very fast before dying, causing a final quick rise.
2. **Starch Gelatinisation:** At temperatures above 60°C , starch granules absorb water and expand, turning into a solid structure that forms the crumb of the bread.
3. **Protein Coagulation:** Gluten proteins denature and harden due to heat, locking the bread shape and volume in place.
4. **Crust Formation (Maillard Reaction):** Moisture evaporates from the outer surface of the dough, and sugar/amino acid browning reactions (Maillard reaction) form a dark, crispy outer crust.

QUESTION 3: SAMPLING TECHNIQUES AND RAW MATERIAL RECEIVING

[TOTAL MARKS: 24]

3.1.1 [2 Marks]

- **Expected Answer (Any two (2) of the following for 1 mark each; max 2 marks):**
 - Wipe down the sampling probe/scoop with an alcohol sanitising wipe and let it dry.
 - Visually inspect the tool to ensure there is no leftover powder, rust, dust, or water from previous use.
 - Wear clean, sterile disposable gloves before handling the sampling equipment.

3.1.2 [5 Marks]

- **Expected Answer:**
 - **Main Quality Reason (1 mark):** Sampling is done before unloading to verify that the incoming flour meets safety and quality standards, preventing the contamination of thousands of kilograms of existing flour already stored in the silos.
 - **Four (4) Physical Quality Checks (Any four (4) for 1 mark each; max 4 marks):**
 1. Check for the presence of pests, insects, or weevils.
 2. Check the moisture level (ensure it is dry and not clumped).
 3. Check the colour (ensure it is typical white/off-white, with no grey or yellow off-colours).

4. Check the odour (ensure there are no musty, sour, or chemical smells).
5. Check for physical foreign objects (such as stones, plastic, paper, or metal threads).

3.1.3 [5 Marks]

- **Expected Answer:**

- **1. Accepted (1 mark):** Apply an "Accepted" **green** label, and move the raw materials into the main ingredients storage area for immediate production use.
- **2. Quarantined / On Hold (2 marks):** Apply a "Quarantined" **yellow** label (1 mark). Move the materials to a secure, designated quarantine holding zone while waiting for lab tests, ensuring no one uses them in production (1 mark).
- **3. Rejected (2 marks):** Apply a "Rejected" **red** label (1 mark). Move the materials to the rejection/waste dock and arrange to send them back to the supplier or discard them (1 mark).

3.1.4 [4 Marks]

- **Expected Answer (1 mark per step in correct sequence; max 4 marks):**

1. **Step 1:** Wash and scrub the scoop with warm water and detergent to remove physical flour paste and residues.
2. **Step 2:** Rinse the scoop thoroughly with clean, hot water to wash away all chemical detergent soap.
3. **Step 3:** Apply an approved chemical sanitiser (such as an alcohol-based or chlorine-based solution) to destroy micro-organisms.
4. **Step 4:** Allow the scoop to air-dry completely on a clean, sanitised rack (do not dry with dirty cloths).

3.1.5 [4 Marks]

- **Expected Answer (Any four (4) of the following for 1 mark each; max 4 marks):**

- Date and Time when the sample was taken.
- Name of the Raw Material (e.g., Cake Flour, White Bread Flour, Yeast).
- Unique Batch/Lot Number of the delivery.
- Supplier Name and Delivery Note Number.
- Name and Signature of the operator who took the sample.

3.1.6 [4 Marks]

- **Expected Answer (1 mark per step in correct sequence; max 4 marks):**
 1. Receive the formal written quality approval certificate or sign-off sheet from the laboratory.
 2. Remove the yellow "Quarantine" labels from the pallets and replace them with green "Accepted" labels.
 3. Update the warehouse tracking system (e.g., SAP or ERP system) to show the batch status is changed from quarantine to released.
 4. Move the raw materials from the quarantine holding area into the active production dispensing area or silo intake.

QUESTION 4: OPERATE SINGLE-STAGE STAND-ALONE BAKING EQUIPMENT

[TOTAL MARKS: 26]

SECTION 4.1: Pre-Start, Starting, and Operating Principles

4.1.1 [3 Marks]

- **Expected Answer (Any three (3) of the following for 1 mark each; max 3 marks):**
 - Check that the red emergency stop button is released and functions correctly.
 - Inspect the safety guard/cage around the mixing bowl to ensure it opens and closes smoothly and cuts power when lifted.
 - Visually inspect the inside of the mixing bowl to ensure it is clean, dry, and free of any foreign objects (such as tools or cloths).
 - Check the machine for any visible oil leaks, loose bolts, or exposed electrical wiring.
 - Confirm that the main electrical isolation switch is turned ON.

4.1.2 [4 Marks]

- **Expected Answer (1 mark per point; max 4 marks):**
 - **Timer Settings:** Check that the digital/mechanical mixing timers are set to the correct recipe times.
 - **Speed Controls:** Check that the speed controls successfully transition from low speed to high speed.
 - **Safety Interlock:** Test that the motor cuts out immediately when the safety guard is lifted during a dry run.

- **Bowl Direction:** Verify that the mixing bowl rotates in the correct direction as specified by the manufacturer.

4.1.3 [10 Marks]

- **Expected Answer (1 mark per correct step in sequence; max 10 marks):**

1. **Weighing:** Weigh the dry ingredients (flour, yeast, improver) and liquids (water) according to the recipe sheet.
2. **Loading:** Load dry ingredients followed by liquids into the mixing bowl.
3. **Safety Prep:** Lower the safety guard/cage over the mixing bowl completely.
4. **Initial Start:** Turn on the mixer and run it at **low speed** for **2 to 3 minutes** to hydrate the flour and blend the ingredients.
5. **High Speed Kneading:** Switch the mixer to **high speed** for **5 to 8 minutes** to stretch and develop the gluten structure.
6. **Monitoring:** Monitor the dough until it pulls away cleanly from the sides of the bowl and appears smooth and elastic.
7. **Discharging:** Turn off the machine, lift the safety guard, and safely unload the developed dough into a dough trough.
8. **Identify Operational Fault (Scenario action 1):** Identify the loud, high-pitched squealing sound and hot motor as major mechanical/electrical hazards.
9. **Emergency Intervention (Scenario action 2):** Stop the mixer immediately by pressing the red Emergency Stop button. Do not wait for the mixing cycle to finish.
10. **Reporting:** Report the breakdown and overheating immediately to the shift supervisor and maintenance team, and place a Lockout/Tagout (LOTO) tag on the isolator.

SECTION 4.2: Shutdown and Post-Shutdown Procedures

4.2.1 [5 Marks]

- **Expected Answer (1 mark per step in correct sequence; max 5 marks):**

1. **Stop:** Press the red Emergency Stop button on the Spiral Mixer control panel.
2. **Isolate:** Turn the main electrical isolation switch on the wall or machine body to the "OFF" position.
3. **Lockout/Tagout (LOTO):** Attach your personal safety lock and a "DANGER - DO NOT OPERATE" tag to the isolator switch.

4.**Report:** Verbally report the squealing noise and hot motor details to the shift supervisor (John) and the maintenance department immediately.

5.**Log:** Write down the exact shutdown time, current batch details, and observed faults in the machine's daily logbook.

4.2.2 [4 Marks]

- **Expected Answer (1 mark per point; max 4 marks):**
 - **Dough Salvage:** Safely scoop out the semi-mixed dough batch from the bowl and place it into a scrap bin or holding tub as instructed by the supervisor.
 - **Spillage Clean Up:** Sweep up any spilled dry flour and mop any water puddles around the mixer base to prevent slip-and-fall hazards.
 - **Warning Sign Placement:** Place a physical "Out of Service" warning sign on the mixer so other operators know it is faulty.
 - **Handover Communication:** Inform the incoming shift operator about the machine fault and LOTO status during the shift change handover.

[END OF MARKING MEMORANDUM]