

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: MEAT PROCESSING OPERATOR
SAQA ID	121153
NQF LEVEL	3
CREDITS	123
DURATION	2 hrs 00min

TOTAL MARKS	100
PASS MARK	50 Marks
DATE OF EISA	

GENERAL EISA RULES

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I HEREBY CONFIRM THAT I HAVE READ THE ABOVE EISA RULES AND DECLARE THAT I UNDERSTAND AND ACCEPT THE RULES

CANDIDATE

SIGNATURE

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QUESTION 1:

SECTION 1.1: Read the following Production Shift End Report for the Beef Polony Line carefully to answer questions 1.1.1 to 1.1.5.

BEEF POLONY LINE - PRODUCTION SHIFT END REPORT

- **Shift:** Day Shift ($06 : 00$ to $14 : 00$)
- **Date:** 12 October 2026
- **Supervisor:** Thabo Molefe (Shift Supervisor)
- **Operator:** Pieter Botha (Processing Operator)
- **Target Output:** $10\,000$ units of Beef Polony (1 kg each)
- **Actual Output:** $8\,500$ units of Beef Polony
- **Under-production Variance:** $-1\,500$ units
- **Waste / Rejected Batch:** $1\,500$ ruined units (discarded due to grease out/temperature abuse)
- **Incident Summary:** At $10 : 00$, the emulsion cutter (bowl chopper) motor started making a grinding noise and running hot. Operator Pieter Botha did not stop the machine or report this to Supervisor Thabo Molefe. Pieter continued running the chopper for 20 minutes to finish the batch. This mechanical friction caused the temperature of the meat emulsion to rise to 18°C (the safe limit is 12°C). At 18°C , fat separation ("greasing out") occurred, ruining the entire batch of $1\,500$ units. Pieter finally called maintenance at $10 : 30$. The maintenance team replaced a faulty bearing within 15 minutes , but the $1\,500$ units had to be rejected and thrown away as food waste.
- **Shift Administration Note:** Pieter 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 Analyze the provided Shift End Report and write a detailed analysis explaining how poor communication led to the loss of **1 500 units** of beef polony. In your response, you must:

1. Identify four (4) specific communication failures committed by Pieter during the shift. (4)

1.1.2 Pieter decided to hide the machine's warning signs and continue running the faulty bowl chopper. State two (2) ways this individual decision damages trust and teamwork between the operator and the shift supervisor. (2)

1.1.3 Read the following multiple-choice question and write down only the correct letter (**A**, **B**, **C**, or **D**).

Why is it essential for the business administration of the meat processing plant to have the production report submitted immediately at the end of the shift (**14 : 00**) instead of **45 minutes** late?

- **A.** To allow the costing department to trace material waste and account for financial losses without delay.
- **B.** To allow the supervisor to leave the factory early before the shift changeover.
- **C.** To ensure the cleaning staff can start washing the floors on the packaging line.
- **D.** To prevent the maintenance team from accessing the machine logbooks. (2)

ANSWER

1.1.4 Under South African meat safety legislation (such as the Meat Safety Act, Act 40 of 2000), identify which one (1) of the statements below is **TRUE** regarding the temperature control of processed raw meat emulsions during mechanical chopping:

- **Statement A:** Meat emulsions can safely reach 25°C during chopping because the subsequent cooking process kills all bacteria and melts the fat back into the meat.
-
-

- **Statement B:** The temperature of the meat emulsion must be kept below 12°C during chopping to prevent fat separation (greasing out) and stop the rapid growth of food poisoning bacteria. (2)
-
-

1.1.5 State two (2) common food safety terms or abbreviations (such as HACCP or CCP) that Pieter must use when writing a formal shift production report to describe temperature deviations in a meat processing plant. (2)

1.2:

Read the following workplace scenario and answer questions 1.2.1 and 1.2.2.

WORKPLACE SCENARIO: HIGH-CARE HYGIENE AUDIT

During an unannounced internal quality audit on the sausage-filling line, the shift supervisor, Thabo, observed operator Sipho preparing the filling machine. Sipho walked into the processing hall wearing his protective red gumboots, but he had forgotten to put on his hairnet and beard-snood.

While loading meat mix into the hopper, Sipho dropped a metal filling nozzle onto the floor. He picked up the nozzle and immediately fitted it onto the machine without

washing or sanitizing it. Additionally, Thabo noticed a pool of water collecting under the sausage filler from a dripping wash-hose.

1.2.1 Analyze the scenario and identify three (3) core characteristics of an effective quality control system (such as personal hygiene monitoring or equipment sanitation checks) that were completely missing or violated in Thabo's workspace during this audit. (6)

1.2.2 State two (2) Good Manufacturing Practice (GMP) hygiene rules that Sipho broke before starting work on the active production line. (2)

1.3:

1.3.1 Identify three (3) ways raw meat can become biologically or physically contaminated when an operator drops a machine nozzle onto the floor and fits it back onto the machine without cleaning it. (3)

1.3.2 State three (3) separate reasons why using a chemical sanitiser at the correct dilution strength is essential when sanitising food-contact surfaces on meat processing machinery.(3)

QUESTION 2:

2.1:

2.1.1 Describe four (4) key nutritional benefits (such as protein content, specific vitamins, or essential minerals) that fresh red meat carcasses provide in the human diet. (4)

2.1.2 Describe two (2) biological parts of a meat carcass (specifically myofibrillar proteins and connective tissue) and explain in one sentence how each part affects the final tenderness of processed meat products. (4)

2.1.3 State four (4) physical quality or freshness attributes (such as meat color, fat cover, surface texture, or smell) that an operator must visually check to verify the quality of a fresh beef carcass upon delivery. (4)

2.1.4

Write a short explanation on meat microbiology and carcass spoilage. In your writing, you must:

1. Explain the operational difference between "microbiological contamination" and "microbiological spoilage" in meat. (2)

2. List three (3) environmental factors (such as temperature, moisture, or oxygen) that accelerate the growth of spoilage bacteria on raw carcasses. (3)

3. Describe three (3) practical storage rules (such as temperature control, spacing, or humidity) that an operator must follow to prevent meat spoilage in a cold room. (3)

2.1.5 List four (4) sequential steps that an operator must perform when preparing a chilled meat carcass for safe deboning and portioning in the cutting room. (4 Marks)

QUESTION 3:

3.1. PORTIONING WORKSTATION SCENARIO & PLANT LAYOUT

I. Workstation Operational Instructions (Workplace Standard #2026-M3)

- **Target Task:** Prepare chilled beef carcasses for primal portioning and release conforming product to the sausage-making production line.
- **Workplace Environmental Limits:** Workstation room temperature must be maintained strictly at $\leq 10^{\circ}\text{C}$ to control microbial growth.
- **Raw Material Specifications:** Chilled quarters of beef received at a validated core temperature of $\leq 4.0^{\circ}\text{C}$
- **Quality Grading and Traceability System:**
 - *Grade 1 (Conforming):* Optimal fat cover, normal pH (5.4 to 5.8), bright red muscle.
 - *Grade 2 (Sub-Standard):* Marginal bruising or slight color variance, dry/firm/dark (DFD) meat suitable for processing but not retail cuts.
 - *Grade 3 (Condemned):* Pungent odor, green discoloration, or pH > 6.2 , indicating decomposition or high microbial load.

II. Workstation Tools and Equipment Layout

1. **Preparation Area:** Overhead meat rail with safety hooks and hydraulic quarters hoist.
2. **Cutting Station:** Stainless steel portioning table with a built-in high-density red polyethylene cutting board.
3. **Portioning Equipment:** Hand-held air-deboning knives, primal cleavers, and heavy-duty electric band saws with safety guards.
4. **Verification Area:** Digital weight scales (calibrated daily) and clean plastic batch bins on wheels.
5. **Waste Station:** Foot-pedal operated, red color-coded waste bins with tight-fitting security lids, located adjacent to the exit wash bay.

3.1.1 List five (5) items of Personal Protective Equipment (PPE) and cleaning tools that an operator must collect and inspect before starting a shift at a meat portioning workstation. (5)

3.1.2 Describe five (5) standard meat processing techniques used to prepare raw meat carcasses for further processing. (5)

3.1.3 Complete the table below by writing down on your Answer Sheet the correct colour label (Item A) and the required immediate warehouse action (Item B) for each of the three meat quality grades. (6)

Meat Quality Grade	Color-Coded Quality Label (Item A)	Required Immediate Warehouse Action (Item B)
Grade 1 (Conforming Meat)	Write down correct color:	Write down warehouse action:
Grade 2 (Sub-Standard Meat)	Write down correct color:	Write down warehouse action:
Grade 3 (Condemned Meat)	Write down correct color:	Write down warehouse action:

3.1.4

Analyze the workstation sanitation requirements and answer the following questions:

1. List three (3) sequential steps for cleaning and sanitising a meat workstation table and its tools to prevent cross-contamination. (3)

2. State three (3) safe procedures or rules for handling and disposing of condemned (spoiled/rejected) meat waste. (3)

- 3.1.5** List four (4) physical or administrative tasks that an operator must complete to formally and safely release prepared meat products from the workstation to the next processing area. (4)

QUESTION 4:

Read the operational scenario below regarding the use of processing machinery in a meat processing plant, and answer questions 4.1.1 to 4.1.4.

OPERATIONAL SCENARIO: INDUSTRIAL MEAT MINCER FAULT

You are the assigned operator for the Industrial Meat Mincer (Model MG-150). Your shift starts at **06 : 00** . The Standard Operating Procedure (SOP) requires a complete pre-start safety and mechanical check before starting the machine.

During the second production run of beef mince, you notice that the mincer motor starts struggling, the metal barrel of the mincer feels hot to the touch, and the meat is coming out "mashed" and smeared with fat instead of cleanly cut.

4.1.1 List four (4) critical pre-start safety and mechanical checks that an operator must perform on the Industrial Meat Mincer (Model MG-150) before turning on the power. (4)

4.1.2 Describe three (3) control areas or operating requirements (such as motor load, meat temperature, or product flow) that you must monitor on the mincer during operation, and state three (3) corrective actions you must take to resolve the "mashed meat" and hot barrel fault described in the scenario. (6)

4.1.3 Describe the complete operational cycle of the Industrial Meat Mincer (Model MG-150) by listing ten (10) sequential steps, starting from workstation preparation and assembly, to active

mincing, and ending with processing completion.

(10)

4.1.4 Describe four (4) post-shutdown cleaning and maintenance tasks that an operator must perform on the mincer and workstation at the end of the shift to ensure the machine is kept in a clean, hygienic, and safe condition. (4)

END OF EXEMPLAR EXAM PAPER

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

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QUESTION 1: COMMUNICATION, WORK RELATIONS, QUALITY, FOOD SAFETY, AND LEGISLATION

[TOTAL MARKS: 26]

SECTION 1.1: Shift Reporting, Communication, and Business Administration

QUESTION 1.1.1

- **Expected Answer Model:**

- 1. Four (4) Communication Failures (1 mark per correct failure; max 4 marks):

- Pieter failed to report the grinding noise and overheating of the bowl chopper immediately to his supervisor Thabo at 10 : 00 .
 - He failed to communicate with the maintenance department immediately when the mechanical warning signs started, waiting 30 minutes before calling them.
 - He did not communicate or consult with his supervisor before making the decision to continue running a faulty machine with raw meat inside.
 - He failed to submit the shift production report on time at 14 : 00 , delaying it by 45 minutes .

QUESTION 1.1.2

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

- It shows a lack of transparency and honesty, making the supervisor unable to rely on the operator's reports.
 - It shows a disregard for plant safety and operational procedures, which breaks the standard workplace hierarchy.
 - It prevents the supervisor from adjusting schedules or coordinating with the packaging team to handle the delay.
 - It creates conflict and tension between the supervisor and the operator during post-incident investigations.

QUESTION 1.1.3

- **Expected Answer:**

- **A** (To allow the costing department to trace material waste and account for financial losses without delay) (2 Marks).

QUESTION 1.1.4

- **Expected Answer:**

- **Statement B** (The temperature of the meat emulsion must be kept below 12°C during chopping to prevent fat separation and stop rapid bacteria growth) (2 Marks).

QUESTION 1.1.5

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

- **CCP** (Critical Control Point)
- **HACCP** (Hazard Analysis Critical Control Point)
- **SOP** (Standard Operating Procedure)
- **LOTO** (Lockout/Tagout)
- **GMP** (Good Manufacturing Practice)

SECTION 1.2: Food Safety, Quality Systems, and GMP

QUESTION 1.2.1

- **Expected Answer (Any three (3) of the following for 2 mark each; max 6 marks):**

- **Equipment Sanitation Check:** No quality check was done on the dropped nozzle before fitting it back.
- **Personal Hygiene Compliance:** No monitoring of employee PPE (missing hairnet and beard-snood).
- **Foreign Object Prevention:** Risk of floor dirt and debris entering the meat hopper.
- **Housekeeping / Workstation Safety:** Failure to report or dry up the pool of water under the filling machine.
- **Process Control Checks:** Lack of active operator monitoring of tools and machinery cleanliness.

QUESTION 1.2.2

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

- Siphon failed to wear a clean hairnet over his hair.
- He failed to wear a beard-snood to cover his facial hair.

- He did not sanitise his hands and workstation tools after they touched the floor.
- He failed to report the leaking water-hose (facility hazard).

SECTION 1.3: Food Contamination and Sanitation

QUESTION 1.3.1

- **Expected Answer (Any three (3) of the following for 1 mark each; max 3 marks):**
 - **Biological Contamination:** Pathogenic bacteria on the floor (such as *Listeria monocytogenes* or *Salmonella*) are transferred directly into the sausage mix.
 - **Physical Contamination:** Dirt, dust, or metal shavings from the floor are introduced into the sausage mix.
 - **Cross-Contamination:** Contaminants from non-food-contact surfaces (the floor) are introduced to food-contact parts of the machine.

QUESTION 1.3.2

- **Expected Answer (Any three (3) of the following for 1 mark each; max 3 marks):**
 - If the sanitiser is too weak, it will not kill the bacteria on the machine, leaving pathogens to contaminate the meat.
 - If the sanitiser is too strong, chemical residues can get into the meat, causing chemical food poisoning and customer harm.
 - Using the correct strength ensures the chemical is safe for stainless steel and does not corrode expensive machinery.

QUESTION 2: NATURE OF MEAT, QUALITY, MICROBIOLOGY, AND SPOILAGE

[TOTAL MARKS: 24]

SECTION 2.1: Meat Carcass Structure and Quality Attributes

QUESTION 2.1.1

- **Expected Answer (Any four (4) of the following for 1 mark each; max 4 marks):**
 - High-quality complete protein for muscle growth and repair.
 - Rich source of bioavailable iron to prevent anemia.
 - Rich source of zinc to support the immune system.

- Rich source of Vitamin B-complex, especially Vitamin B_{12} , for nervous system health.
- Essential fatty acids necessary for cell structure.

QUESTION 2.1.2

- **Expected Answer (1 mark for biological part definition, 1 mark for impact explanation; max 4 marks):**
 - **Myofibrillar proteins (2 Marks):** Contractile proteins (actin and myosin) that form muscle fibers (1 mark). If they contract tightly during rigor mortis without temperature control, the meat becomes tough and chewy (1 mark).
 - **Connective tissue (2 Marks):** Structural tissue (mainly collagen) surrounding muscle bundles (1 mark). Muscles with high connective tissue (such as the shin or shoulder) are naturally tough and require slow, moist cooking to soften (1 mark).

QUESTION 2.1.3

- **Expected Answer (Any four (4) of the following for 1 mark each; max 4 marks):**
 - **Meat Color:** Bright cherry-red for beef, or light pink for pork.
 - **Fat Cover and Color:** Firm, creamy-white fat (not soft, oily, or yellow).
 - **Surface Texture:** Moist and firm to the touch (not sticky, dry, or slimy).
 - **Odor:** Fresh, metallic, or neutral meat smell (no sour or putrid odors).
 - **Absence of Damage:** No visible deep bruising, blood clots, or physical tears.

QUESTION 2.1.4

- **Expected Answer Model:**
 - 1. Difference (2 Marks):** Contamination means introducing harmful bacteria into meat without changing its smell or appearance (1 mark). Spoilage means bacteria have grown to high levels, breaking down proteins and causing bad smells, slime, or color changes (1 mark).
 - 2. Three (3) Environmental Factors (1 mark per correct factor; max 3 marks):**
 - **Temperature:** Warm temperatures (above 4°C) speed up bacterial growth.
 - **Moisture / Water Activity:** High humidity or wet meat surfaces allow bacteria to multiply fast.
 - **Oxygen:** The presence of air/oxygen allows common aerobic spoilage bacteria to grow on carcass surfaces.
 - 3. Three (3) Cold Room Storage Rules (1 mark per correct rule; max 3 marks):**

- Maintain cold room temperature strictly between 0°C and 4°C .
- Ensure adequate physical spacing between carcasses on the overhead rails so air can circulate freely.
- Keep relative humidity controlled (typically 85% to 90%) to prevent condensation on carcass surfaces.

QUESTION 2.1.5

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

1. Verify and record the core temperature of the carcass to ensure it is below 7°C .
2. Wash and sanitise all deboning knives, saws, and steel chain-mail gloves in hot water (82°C).
3. Inspect the carcass surface for visible dirt, hair, stamp ink, or bruising, and trim them away using a clean knife.
4. Carefully transfer the chilled carcass onto the cutting room overhead rails to position it for safe primal cutting.

QUESTION 3: WORKSTATION MANAGEMENT ACCORDING TO SOPS

[TOTAL MARKS: 26]

QUESTION 3.1.1

- **Expected Answer (Any five (5) of the following for 1 mark each; max 5 marks):**
 - Clean waterproof plastic/rubber apron.
 - Stainless steel chain-mail safety glove (for non-knife hand).
 - Cut-resistant arm-guards/sleeves.
 - Sanitised deboning and portioning knives.
 - Food-grade plastic sanitising bucket.
 - Color-coded scrubbing brush (e.g., blue brush for food-contact tables).
 - Waterproof safety boots with non-slip soles.

QUESTION 3.1.2

- **Expected Answer (1 mark per correct definition; max 5 marks):**

- **Deboning:** Separating meat tissue and muscles cleanly from the bone structure.
- **Trimming:** Removing excess external fat, thick gristle, silver-skin, and connective tissue.
- **Dicing:** Cutting large boneless meat blocks into small, uniform cubes (such as ^{2 cm} cubes) for stews.
- **Mincing:** Passing meat pieces through a mechanical mincer plate to break down muscle fibers.
- **Portioning:** Cutting meat into precise, weighed individual units (such as ^{200 g} steaks) to meet specifications.

QUESTION 3.1.3

- **Expected Answer Model (1 mark per item; max 6 marks):**
 - **Grade 1 (Conforming Meat):**
 - Color Label (Item A): **Green Label** (1 mark).
 - Action (Item B): **Release for processing/production** (1 mark).
 - **Grade 2 (Sub-Standard Meat):**
 - Color Label (Item A): **Yellow Label** (1 mark).
 - Action (Item B): **Isolate for re-evaluation or downgrade** (1 mark).
 - **Grade 3 (Condemned Meat):**
 - Color Label (Item A): **Red Label** (1 mark).
 - Action (Item B): **Move immediately to secure waste bin for destruction** (1 mark).

QUESTION 3.1.4

- **Expected Answer Model:**
 1. **Three (3) Cleaning Steps (1 mark per correct step in sequence; max 3 marks):**
 - Scrape and remove all loose fat and meat scraps from the table surface and place them in the waste bin.
 - Scrub all table surfaces and tools with hot water and chemical detergent to dissolve fat and organic oils.
 - Rinse away soap, apply an approved chemical sanitiser, leave it for the required contact time, and air-dry.
 2. **Three (3) Waste Handling Rules (1 mark per correct rule; max 3 marks):**

- Place all condemned meat waste immediately into designated red-coded bins labeled "NOT FOR HUMAN CONSUMPTION".
- Add denaturing chemical powder (such as carbolic acid) over the waste meat to prevent unauthorized consumption.
- Keep waste bins closed with tight-fitting lids and move them to a secure, separate waste-holding dock.

QUESTION 3.1.5

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

1. Complete and sign the batch production and temperature transfer log sheet.
2. Verify that the batch identification label (containing the batch number, date, and product name) is firmly attached to the container.
3. Measure and record the final core temperature of the meat batch to ensure it is below 4°C.
4. Place the prepared meat into clean, sanitised plastic crates and transfer them immediately into the cold room.

QUESTION 4: OPERATE SINGLE-STAGE STAND-ALONE MEAT PROCESSING EQUIPMENT

[TOTAL MARKS: 24]

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

QUESTION 4.1.1

- **Expected Answer (Any four (4) of the following for 1 mark each; max 4 marks):**
 - Check that the red emergency stop button works and releases correctly.
 - Verify that the mechanical safety guard over the feed hopper is tightly bolted down.
 - Inspect the inside of the mincing barrel to ensure no foreign objects, tools, or cleaning cloths were left inside.
 - Inspect the power cable and plug for cuts, exposed wires, or moisture damage.
 - Ensure the cutting blades and plates are assembled in the correct direction (cutting edge facing the plate).

QUESTION 4.1.2

- **Expected Answer Model:**
 - **Three (3) Control Areas/Requirements to Monitor (1 mark per point; max 3 marks):**
 1. **Motor Load/Sound:** Listen for changes in motor hum or grinding sounds indicating blockage.
 2. **Meat Temperature:** Ensure the raw meat enters cold (below 4°C) and does not warm up in the barrel.
 3. **Product Flow:** Confirm the mince emerges as clean, separate strands (not a mashed paste).
 - **Three (3) Corrective Actions (1 mark per point; max 3 marks):**
 1. Stop the machine immediately, turn off the power, and isolate the electrical switch (LOTO).
 2. Disassemble the mincer head to inspect the cutting knife and plate; replace blunt knives with sharp ones.
 3. Check if the locking ring on the barrel is too loose or too tight, and adjust it according to manufacturer specifications.

QUESTION 4.1.3

- **Expected Answer (1 mark per correct step in sequence; max 10 marks):**
 1. Wash and sanitise hands, put on clean apron, hairnet, beard-snood, and safety boots.
 2. Assemble the worm screw, cutting knife, and selected mincing plate into the clean mincer barrel.
 3. Securely tighten the hand-wheel/locking ring on the front of the barrel.
 4. Ensure the hopper safety guard is in place and locked.
 5. Plug in the machine and turn the main electrical isolator switch to "ON".
 6. Place a clean, sanitised stainless steel collection tub underneath the discharge plate.
 7. Start the mincer motor and run it empty for **15 seconds** to check for unusual noises.
 8. Feed cold, pre-cut meat chunks into the hopper using ONLY the approved plastic plunger.
 9. Monitor the discharge of minced meat to ensure uniform strands are being extruded.
 10. Turn off the mincer motor, switch off the main electrical isolator, and clean the feed hopper area.

QUESTION 4.1.4

- **Expected Answer (1 mark per correct task; max 4 marks):**

- Turn off the main electrical isolator and unplug the power cable from the wall socket.
- Unscrew the locking ring and remove all meat residues from the cutting knives, plates, and feed screw.
- Scrub the mincer hopper, barrel, screw, plates, and knives with warm water and sanitising detergent.
- Wipe down the exterior motor housing of the machine with a damp sanitised cloth, and dry all stainless steel parts.

[END OF MARKING MEMORANDUM]