AgriSETA

FINAL EXTERNAL INTEGRATED SUMMATIVE ASSESSMENT

OCCUPATIONAL CERTIFICATE: MILLER NQF 5

SAQA ID: 97204 **Credits: 401**

Date: **Marks: 200**

Time: 09h00 – 12h00 **Duration: 3 hours**

Instructions

This paper consists of Ten (8) pages including the cover page. Candidates may use their own calculators.

Use the provided A4 exercise book as your answer book.

All questions are compulsory with a minimum pass mark of 70% for each question.

Question 1 (80 Marks)

Question 2 (30 Marks)

Question 3 (70 Marks)

Question 4 (20 Marks)

- This is a closed book assessment.
- Read the instructions for each question before answering.
- Answer the questions to each number. Clearly specify each question number in the middle of the page and draw a horizontal line after each question.
- Structure all written answers logically. Use the mark allocation for each written question to guide the length of your answer.
- Candidates are not allowed any form of assistance and must always adhere to the invigilator's instructions.
- Any attempt at cheating will lead to disqualification.
- No cell phones are allowed

Name: …….. Signature: ……

QUESTION 1

1.1 Read the following scenarios for each question thoroughly before answering

1.1.1 Complete the questions on the scenarios outlined below:

(a) Scenario

A miller has just completed his shift on a mill (capacity 11 tonnes per hour) and is required to summarise his net production. The layout of the mill weighers can be illustrated as a block diagram as follows:

(The weighers increment 1 digit on their counter every time they tip, and the following start and finishing numbers were taken:)

	WEIGHER	TIP MASS	START	FINISH
A	First break	50kg	1 200 315	1 201 845
B	Mixings to prime product 1	10kg	530 041	530 197
C	Prime Product 1	20kg	312 061	314 301
D	Prime Product 2	10kg	2 053 132	2 054 732
E	Offal	10kg	1 106 323	1 108 003
F	Screenings	10kg	2 003 111	2 003 291
G	Dirty grain milled	100kg	2 304 000	2 304 757

Answer the questions based on the scenario (a) above.

Determine the following:

1.1.1.1. The extraction of each relevant product based on total net products (4)

1.1.1.2 The prime product extraction rate for the shift. (4)

1.1.1.3 The extraction of each product based on dirty grain milled. (4)

1.1.1.4 The evaporative loss. (4)

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(b) *Scenario*

The management of grain in storage is an important aspect milling.

1.1.1.2 Describe how grain is turned over in the silo, and the reason for carrying out this operation. (4)

1.1.2. Complete the questions on both Scenario (a) and Scenario (b) below:

(a) Scenario

The Intake department at a mill receives a consignment of raw material:

1.1.2.1 Why is it an undesirable practice to withdraw grain from a silo which is being filled? (4)

1.1.2.2 Describe a multiple-slot divider for division of a grain sample at Intake (10)

1.1.2.3 What documentation should accompany the consignment? (3)

(b)Scenario

With a consignment of raw material, various tests need to be carried out on the grain received.

1.1.2.4 How would you take a representative sample of grain from a bulk grain truck? (4)

1.1.2.5 How would you take representative samples from a bagged grain truck? (4)

1.1.3. Scenario

The transfer rate of grain from the silo to the screensroom is at 12 500kg per hour. The natural moisture content of the grain is 11%. It is intended to raise the final conditioned moisture level to 16%. This will be done in two stages. The water application at the first stage must increase the moisture content to 12,5%, and the moisture application at the second stage must increase it to 16%.

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Calculate the following:

1.1.3.1 The quantity of water, in litres per hour, which must be added **in both instances** to reach the target level of 16%. (6)

1.1.3.2 The final mass of grain after both water additions. (6)

1.1.4 Answer the question below on grain impurities

1.1.4.1 Give three factors concerning the main screen/cover of a milling separator which could be responsible for grain finding its way into screenings.(6)

1.1.5 Complete the question on the scenario below.

Scenario

By using any damping unit / device with which you are familiar, explain how the following aspects of control of water are obtained:

1.1.5.1 To stop the water flow when the flow of grain stops;(1)

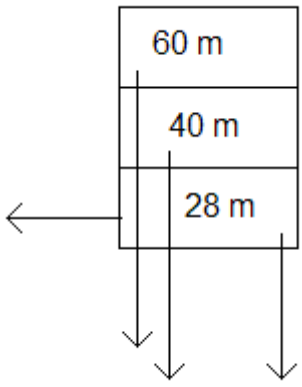
1.1.5.2 To start the water flow when the flow of grain starts;(1)

1.1.5.3 To increase/decrease the water flow independently of the grain flow;(2)

1.1.5.4 To maintain the water flow at a constant rate. (3)

1.1.6 Scenario

The internal scheming of a sifter is essential for milling processes.



Answer the questions below, ***with reasons in each case***, about the separations of the following flow diagram:

1.1.6.1 Write down the particle size ranges for each separation. (4)

1.1.6.2 Which separation would be the most likely to indicate bare dressing? (2)

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1.1.6.3 Which separation would be the most likely to indicate rich dressing? (2)

1.1.6.4 Explain how you would check the section to ensure that the separations were satisfactory. (2)

SUB-TOTAL: 80

QUESTION 2

2.1 Read the questions and scenario thoroughly before answering

2.1.1 Describe in full the method used in your laboratory to carry out a flour/meal moisture test using the "Oven Method", or "Long Method".

Highlight where additional care should be taken, giving reasons. (10)

2.1.2 What do you understand under the term "Plan sifter wander”? (5)

2.1.3 Scenario

You examine the grind on a reduction roll and find that, after balancing the grind on the left and right sides, you cannot obtain the required degree of grinding in the centre.

2.1.3.1 Detail two possible reasons for this situation and explain the circumstances which would have resulted in these situations arising in the first place. (6)

2.1.4 If, instead of a milling loss, your log figures indicate a milling gain, how would you go about tracing the error? (9)

SUB-TOTAL: 30

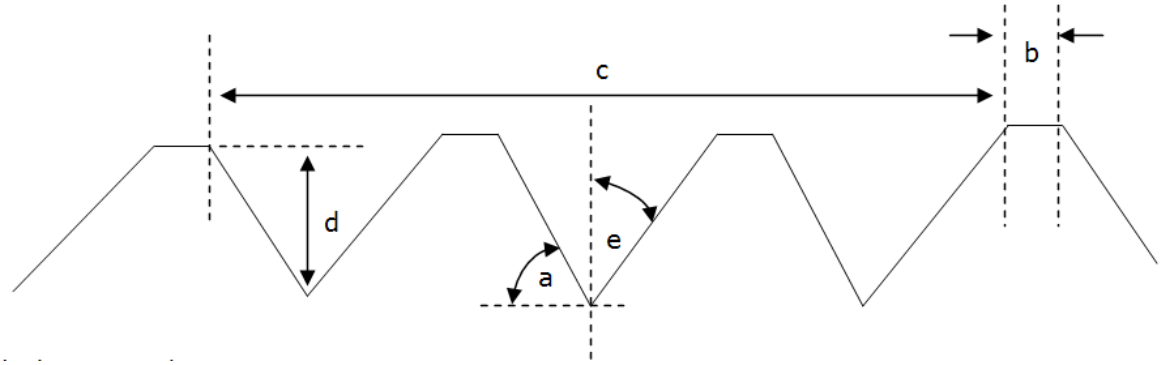
QUESTION 3

Name: ……. Signature: ……

3.1 Read the following information for each question thoroughly before answering

3.1.1 Complete the questions on the fluting of rolls outlined below:

Diagram:



3.1.1.1 Which dimension/s represent the land of the flute (1)

3.1.1.2 Which dimension/s represent the depth of the flute (1)

3.1.1.3 Which dimension/s represent the small angle of the flute. (2)

3.1.1.4 Which dimension/s represent the shape of the flute (2)

3.1.1.5 Which dimension/s represent the pitch/size of the flute. (2)

3.1.1.6 How would you measure the large and small angles? (2)

Answer the question below on milling.

3.1.1.5.1 Distinguish between the following terms and describe how they are derived:

3.1.1.5.1.1Evaporative loss;(2)

3.1.1.5.1.2 Milling gain;(2)

3.1.1.5.1.3 Invisible loss. (2)

3.1.1.5.2 The Manometer (air pressure gauge) reading on a pneumatic filter is lower than normal after cleaning the filter sleeves.

3.1.1.5.2.1 Describe six instances for this occurrence. (6)

3.1.1.5.3 Give reasons why:

3.1.1.5.3.1 Screenings are mixed into bran;(2)

3.1.1.5.3.2 The necessity for processing the screenings before mixing. (4)

3.1.2 Answer the question with regards to the statements below.

Statement:

A user of machinery shall provide and maintain sufficient safety standards to enable work to be carried out without danger to persons.

3.1.2.1 Give 10 examples of general duties of the employer to their employees. (10)

3.1.2.2 List 8 steps before starting up any machinery. (8)

3.1.3 Answer the question on raw material below.

3.1.3.1 Name the five basic principles that are used to separate impurities from grain and the machine for each (10)

3.1.3.2 Give the names of five machines within a milling complex before which, it is advisable, to place magnetic separators and briefly explain why in each case. (10)

3.1.3.3 Why is it important to check **moisture content at intake,** accurately**? (4)**

SUB-TOTAL: 70

QUESTION 4

4.1.1 Read the question thorough and answer the question below.

4.1.1.1 Describe the grinding action of a pair of rolls having blunt flutes in comparison to a pair having normal flutes. (6)

4.1.1.2 Which are the five main reasons for falls on staircases? (5)

4.1.2 Answer the question on raw material below.

4.1.2.1 Name five factors that may influence hectolitre mass.(5)

4.1.3 Read the following information for each question thoroughly before answering

Name: ……. Signature: ……

4.1.3.1 Complete the questions on the information outlined below:

Information:

Describe the life cycle and typical damage done by a:

4.1.3.1.1 Saw-toothed grain beetle.(2)

4.1.3.1.2 Confused flour beetle (2)

SUB-TOTAL: 20

GRAND TOTAL: 200

Name: …….. Signature: ……