



Question Paper

Module 2:	Wheat and the Screenroom	
Date: 3 May 2017	Time: 09:30 – 11:30	Duration: 2 hours

You should have the following for this examination: **answer book, pencil, pen, ruler and calculator.**

All questions carry equal marks. The maximum marks for each section within a question are shown. Answer **ALL EIGHT** questions, starting each new question (1-8) on a **new** page of the answer book.

1. a) Draw a longitudinal section of a wheat grain, labelling all the layers of bran. (8 marks)
- b) Describe briefly the function of the pericarp. (2 marks)
- c) Describe briefly the testa (seed coat). (2 marks)
2. a) List FOUR groups of wheat grown in Germany and state the type of flour for which EACH would be used. (6 marks)
- b) Name the categories of wheat which nabim classifies, stating the purpose for which each one is used. (4 marks)
- c) List TWO insect pests that could affect wheat in the field. (1 mark)
- d) List TWO fungal diseases that could affect wheat in the field. (1 mark)
3. a) i) Name the UK scheme that assures wheat quality when delivering directly from the farm. (1 mark)
- ii) List the benefits the scheme provides to the consumer. (3 marks)
- b) Describe the information shown on a post-harvest declaration form. (4 marks)
- c) Describe FOUR main advantages that a pneumatic intake plant has over a mechanical one. (4 marks)
4. a) i) With the aid of a sketch, describe the principle of operation of the SGA Gravity Selector. (6 marks)
- ii) State the information provided by 'throw indicator discs' for the operation of the machine. (2 marks)
- b) Explain why the gravity selector has largely superseded the de-stoner. (4 marks)

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5. a) State the formula used to determine the capacity of an elevator. (2 marks)
- b) State the formula used to determine the power (in kilowatts) taken by an elevator. (2 marks)
- c) Calculate the approximate power (ignoring frictional losses) taken by an elevator, 20 metres high with a capacity of 50 tonnes per hour. (2 marks)
- d) Explain why the head pulley of an intake elevator might be twice as large as the pulley in the boot. (5 marks)
- e) State why 'Wade' buckets are deep and narrow. (1 mark)
6. a) Describe briefly BOTH the crescent-bladed and paddle-bladed screw conveyors and how they convey wheat. (6 marks)
- b) List SIX factors to be considered when deciding on the motor size required for a screw conveyor. (6 marks)
7. a) State the TWO main methods of adding water to wheat to achieve optimum conditioning. (2 marks)
- b) List FIVE advantages that correct conditioning gives to the miller. (5 marks)
- c) Describe briefly why pre-damping of wheat on intake is now less common. (4 marks)
- d) State what is used in the damping water to help reduce the bacterial count. (1 mark)
8. a) State the purpose of a FIFO bin discharge system. (2 marks)
- b) Sketch THREE bin outlet configurations designed to give a FIFO operation. (6 marks)
- c) Give TWO disadvantages of a FIFO bin discharge system. (2 marks)
- d) Describe briefly the process of drying wheat. (2 marks)