



Question Paper

Module 3:	Mill Processes and Performance	
Date: 9 May 2013	Time: 09:30 – 12:00	Duration: 2½ hours

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

All questions carry equal marks. The maximum marks for each section within a question are shown. Answer **ALL TEN** questions, starting each new question (1-10) on a **new** page of the answer book.

1. a) In stonemilling, explain the terms:
- i) 'low grinding'; (3 marks)
 - ii) 'high grinding'. (3 marks)
- b) A mill of 250 tonnes of wheat per 24 hrs has the following break roll surface.
- | Passage | Roll length |
|---------|-------------|
| IBk | 2 x 1250mm |
| IIBk | 2 x 1250mm |
| IIIBk | 2 x 1250mm |
| IVBkc | 1 x 1250mm |
| IVBkf | 1 x 1250mm |
| VBkf | 1 x 1000mm |
- Calculate the mill's specific roll surface (*show all workings*). (4 marks)
- c) Explain why milling stocks should not be returned to the machine from which they came or to any machine preceding it. (2 marks)
2. a) Mark on the attached flow sheet the stock destinations for EACH of the passages shown. (11 marks)
- b) State the type of machine that immediately follows the roller mills on:
- i) passage A;
 - ii) passage E. (1 mark)
3. a) List FIVE possible sizings (granulations) of stock within the break system to the next passage, excluding flour and break stock. (5 marks)
- b) Describe briefly the process of purification. (5 marks)
- c) State TWO circumstances when purifierless milling is not advisable. (2 marks)

continued overleaf

4. a) List SIX factors which have enabled millers to introduce shorter reduction systems. (6 marks)
- b) State FOUR areas within the milling process which are sources of bran and wheatfeed. (4 marks)
- c) State the normal speed of an infestation destroyer for:
- i) Wheat; (1 mark)
- ii) Flour. (1 mark)
5. a) Explain how stock from a dust collector or bran finisher is handled in order to maximise the recovery of flour. (6 marks)
- b) Describe briefly the operation of a rotary seal/airlock. (4 marks)
- c) Explain the term 'Phase Density'. (2 marks)
6. a) List SIX advantages a square plansifter has over the original free swinging plansifters. (6 marks)
- b) List THREE reasons why nylon has replaced silk for covering sieves in plansifters and purifiers. (3 marks)
- c) Explain the term 'roll tram'. (2 marks)
- d) State why a rollermill should never run without feed when the main rolls are engaged. (1 mark)
7. a) State the function of germ in the wheat berry. (1 mark)
- b) Describe where germ is found in the wheat berry. (2 marks)
- c) List THREE main passages in the mill flow from which germ can be extracted. (3 marks)
- d) List THREE vitamins found in germ. (3 marks)
- e) State THREE reasons why germ is separated from flour and wheatfeed, other than as a source of vitamins. (3 marks)
8. a) List EIGHT effects on the mill of a temporary increase of 15% on II break roll release. (8 marks)
- b) State FOUR flowsheet variations which may be considered when designing a multigrind mill. (4 marks)
9. In a typical mill, list TWELVE factors which should be checked and/or adjusted in order to reduce a flour's colour grade or ash content. (12 marks)
10. List TWELVE important effects of high humidity on mill performance. (12 marks)