

OXFORD CAMBRIDGE AND RSA EXAMINATIONS

Advanced GCE

BUSINESS STUDIES

2877

Further Operations Management

Thursday

23 JUNE 2005

Afternoon

1 hour 30 minutes

Additional materials:
8-page Answer Booklet

TIME 1 hour 30 minutes

INSTRUCTIONS TO CANDIDATES

- Write your name, Centre number and candidate number in the spaces provided on the answer booklet.
- Answer **all** questions.
- Write your answers on the separate answer booklet provided.
- If you need extra sheets of paper, fasten these sheets securely to the answer booklet.
- Read each question carefully and make sure you know what you have to do before starting your answer.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is 60.
- You will be awarded marks for the quality of written communication where an answer requires a piece of extended writing.

This question paper consists of 3 printed pages and 1 blank page.

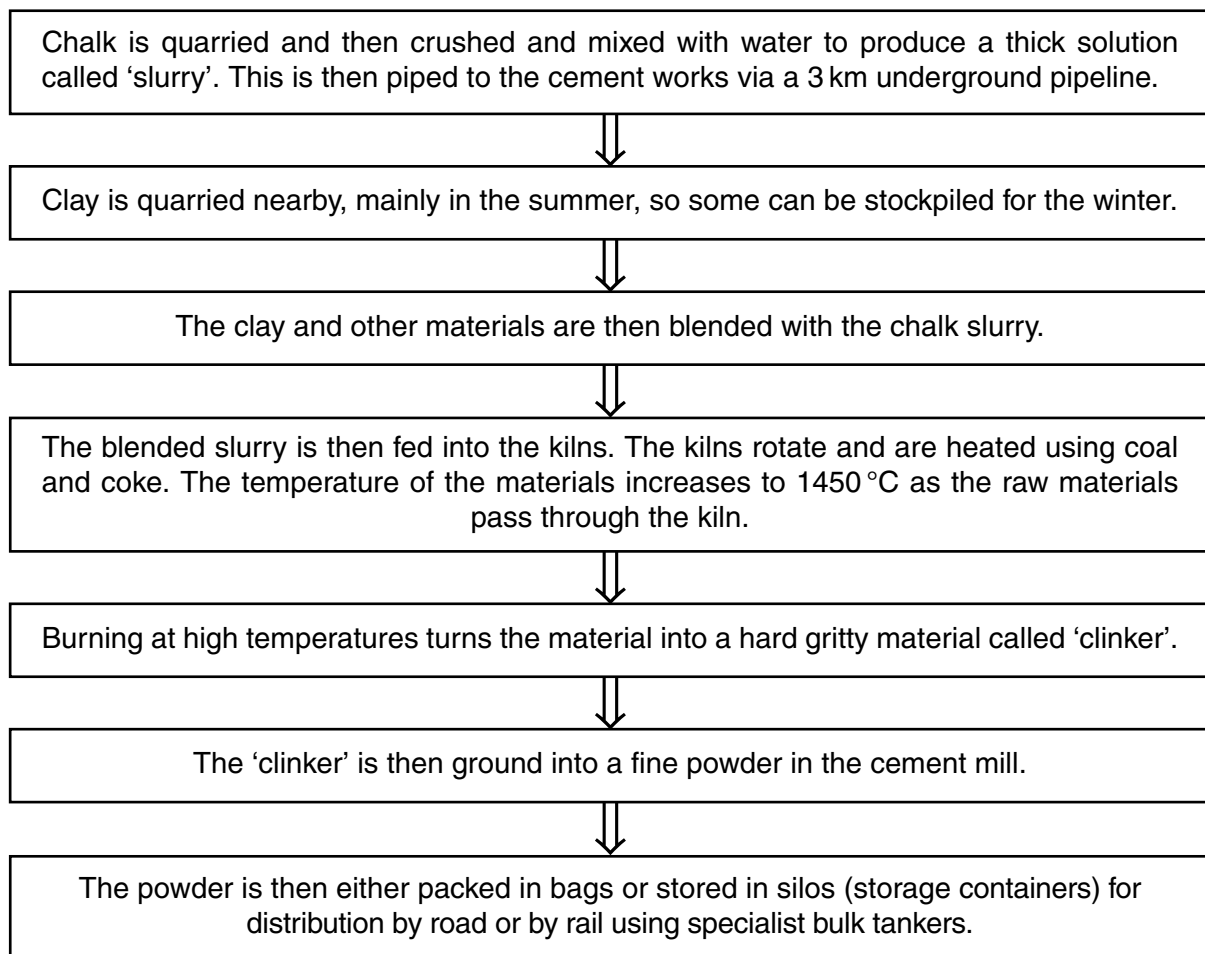
Northbury Cement

In 1962 Northbury Cement (NC) commenced production, supplying customers in South West England. Working at full capacity the plant can produce 700 000 tonnes of cement per annum. Last year the factory produced 650 000 tonnes. Raw materials are found nearby and there is a further 25 years' supply available provided that the firm can gain planning permission for expanding its quarry. Cement is one of the most versatile building materials. It is fundamental to construction – the average house contains six tonnes of cement.

5

NC has two kilns for making cement and uses the wet process method of production. The following is a process diagram for the production of cement at Northbury.

Process diagram for the production of cement at Northbury



Currently NC employs 120 people, with 42 working in production and 35 working on the engineering side. Most of the remainder are in management or administration. The factory operates a continuous 12-hour shift system. Many staff are highly specialised having gained qualifications at local FE colleges. Process engineers look after the computer control systems and check computer data to maximise the efficiency of the plant.

10

NC always aims to achieve the highest production standards. Laboratory technicians and chemists check the quality of raw materials and finished products. Quality is assessed at all stages of the production process. Tests are done on an hourly basis. Where major civil engineering projects are concerned, e.g. shopping malls or hospitals, blocks are made and tested for strength after 7, 14 and 28 days.

15

Apart from researching into new products to meet its customers' requirements, scientists in NC's laboratories are continuously testing alternative raw materials that could be used in the production process (such as fuel ash from power stations to replace clay). NC is always looking at methods to reduce costs. Currently it is researching the use of different waste products, in addition to used tyres, to replace coal and coke. Many local residents are concerned about the issue of burning tyres to heat the kilns (see Fig. 1). Fuel is a major cost and tyres have replaced 20% of the coal (saving some £15 000 per year). The ultimate aim in some cement factories is to burn only recycled or used materials so reducing fuel costs to zero. 20 25

Are you concerned by a burning issue?

It is week 3 of the Northbury Times campaign on the burning of tyres at the local cement works. We have been inundated with responses from local residents worried about the smoke coming out of the works' chimneys. Environmental groups have pointed to tyre burning as a cause of health problems in other areas and are demanding that filters are put on the burners to clean up the smoke.

Fig. 1

Stock control is another area where significant savings can be made. NC uses a computer-based system to monitor all stock held for maintenance. In 2004 the factory held about **6000 lines** of maintenance stock ranging from motors and gearboxes to nuts, bolts and protective gloves. **(Maintenance stock has a value of £1.5 million so the average value of a line of stock is £250.)** Management aims to reduce the number of lines of maintenance stock held to 2500 by the end of 2005. 30

Health and Safety and the environment are key issues at the factory. There are monthly safety briefings and training sessions. Health and Safety Inspectors must investigate all serious incidents. Laws have required the factory to lower gas and dust emissions. In the 1990s, £21 million was spent on the works to improve efficiency, safety and environmental performance. Last year the company spent £250 000 on continuous monitoring of emissions. Strict laws also apply concerning the disposal of waste materials and noise from factory machinery. 35

Answer **all** questions.

- 1 (a) Using the information in lines 27–32, calculate the percentage saving in the value of maintenance stock NC might achieve by the end of 2005 if it can reach its stock level target. (Ignore any change in stock prices that may occur.) [4]
 - (b) Analyse why NC might be unable to achieve a similar reduction in its levels of **production** stock. [6]
 - (c) Evaluate the impact the external environment may have on operations at NC. [16]

- 2 (a) Analyse **two** reasons why Northbury is an ideal location for cement production. [6]
 - (b) Discuss the benefits of research and development to NC. [10]
 - (c) Evaluate the methods NC might use to ensure it sells products of the highest quality to its customers. [16]

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