

OXFORD CAMBRIDGE AND RSA EXAMINATIONS

Advanced GCE

BUSINESS STUDIES

2877

Further Operations Management

Thursday **26 JANUARY 2006** Morning 1 hour 30 minutes

Additional materials:
8 page Answer Booklet

Candidates may use calculators in this examination.

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.
- If you use 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.

FLAME CANDLES

Roger Gane established Flame Candles in 1989. It became a partnership in 1991 when his wife Philippa joined the business. Originally, Flame was a wholesale business importing candles mainly from Portugal. However, in 1995, it began to manufacture candles for a variety of retail outlets. Flame employs only five full-time workers in production and packing. Because of the unpredictable demand for candles, Flame requires a highly flexible workforce. At those times of the year when the firm is very busy, it uses an employment agency to supplement its full-time workforce, with up to 30 temporary workers being employed. The business has achieved a 20% growth in sales turnover each year since it was established. Flame hopes to maintain this high level of growth in the coming years, though Roger realises this will have significant implications for the operational side of the business. In September 2003, Flame launched its own brand of candle products. It sells these through its factory shop, with orders also taken via the firm's website. 5 10

Flame makes candles to order using the batch production method. The wax is melted overnight in tanks to benefit from the lower off-peak electricity costs. Work begins at 8.00 am when the molten wax and fragrances are blended. The wax is then poured into candle moulds with a variety of shapes and sizes, or into pre-formed glass containers (which Flame can etch with customers' designs). This may be done using the automatic filling machine or with moulds being filled by hand. The candles are then cooled and moved to the packing department. Candles are a high value added product and many of Flame's upmarket retail customers demand candles of the highest quality. Customers also require their products to be packaged in expensive, highly decorative boxes. 15 20

Quality is an area where Roger feels improvements could be made. Flame operates a system where all the production and packing workers are made equally responsible for their tasks, rejecting products they believe are not up to standard. Packing is the only area with a full-time supervisor as many temporary workers are employed in this department. Demand for products is very high in the months from July to September as retailers and other businesses, such as restaurants, order their products for Christmas. At these busy times, Flame has to sub-contract production to other candle-makers. This is when quality problems can arise. 25

As Flame is a business that mainly makes to order, it holds very low stocks of finished products. Candles are packed and immediately delivered to customers. However, significant stocks of raw materials have to be held. Wax is bought in block form or 25 kilo bags. For convenience, these are stored on the first floor of the factory, close to the melting tanks. Fragrances used are purchased from Ireland and France. Packaging is produced locally, although the highly decorative boxes required by some customers have to be ordered from the north of Scotland. 30

Efficient production planning is vital as only one shift is worked at Flame. The production cycle varies according to: 35

- the number of candles ordered;
- the actual size of the candle;
- whether the candle is in an etched glass container;
- the complexity of the packaging. 40

Roger uses a management information system to produce Gantt charts. This automatically works out the timings of each job, but does not allow for any problems that might arise in production or packing. Candle manufacture on a small scale does not require sophisticated technology. Computers are used to control the temperature of the wax and the sensors on the automatic filling machine. However, if Flame were to expand, it would need to make significant new investment in: 45

- automated candle making equipment;
- new containers for storing wax;
- larger tanks for melting wax.

The benefits would be that less labour would be required but the business would lose the flexibility to match production with the highly seasonal levels of demand it currently faces. Being small, the business needs to be particularly cost conscious. The Finance Manager has divided the business into two cost centres, production and packing, and uses the full costing method for financial control. 50

Each year, Flame carries out a risk assessment as part of its health and safety policy and a number of hazards have been identified. Roger is concerned about the chemicals in fragrances, as these might affect employees' breathing and cause skin problems. Floors around the production area can become slippery when molten wax is spilt. The bags of wax have to be carried by hand to the melting tank area. Flame has also had complaints from nearby residents about the smell from the factory. Waste, however, is not a major problem. Packaging is recycled locally, whilst reject candles can either be melted down or sold cheaply through the factory shop or to employees. 55 60

Answer **all** questions.

- 1 (a) Flame has two main cost centres, production and packing. The table below shows the annual costs of the business.

	Production	Packing
Direct labour costs	£180,000	£120,000
Direct material costs	£350,000	£50,000
Direct maintenance and cleaning	£15,000	£5,000
Administration and other costs	£95,000	
Rental of building	£25,000	

The Finance Manager uses full costing to allocate overheads as a proportion of labour costs to each of the cost centres.

Calculate the overheads allocated to each cost centre. Show your working clearly. [4]

- (b) Discuss whether full costing is an appropriate method of costing for Flame. [10]
- (c) Evaluate the operational implications for Flame if the business continues to expand at its current rate. [16]
- 2 (a) Analyse why Flame should provide a healthy and safe working environment for its employees. [6]
- (b) Analyse the usefulness of Gantt charts to Flame. [6]
- (c) Evaluate methods Roger might use to ensure quality in the business' operations. [16]

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