General Certificate of Education
June 2008
Advanced Level Examination

**BUSINESS STUDIES** **BUS4**
**Unit 4**

Wednesday 11 June 2008 9.00 am to 10.30 am

**For this paper you must have:**
- a 12-page answer book.

You may use a calculator.

Time allowed: 1 hour 30 minutes

**Instructions**
- Use black ink or black ball-point pen.
- Write the information required on the front of your answer book. The *Examining Body* for this paper is AQA. The *Paper Reference* is BUS4.
- Answer **all** questions.
- Do all rough work in the answer book. Cross through any work you do not want to be marked.

**Information**
- The maximum mark for this paper is 84.
  Four of these marks will be awarded for using good English, organising information clearly and using specialist vocabulary where appropriate.
- The marks for questions are shown in brackets.

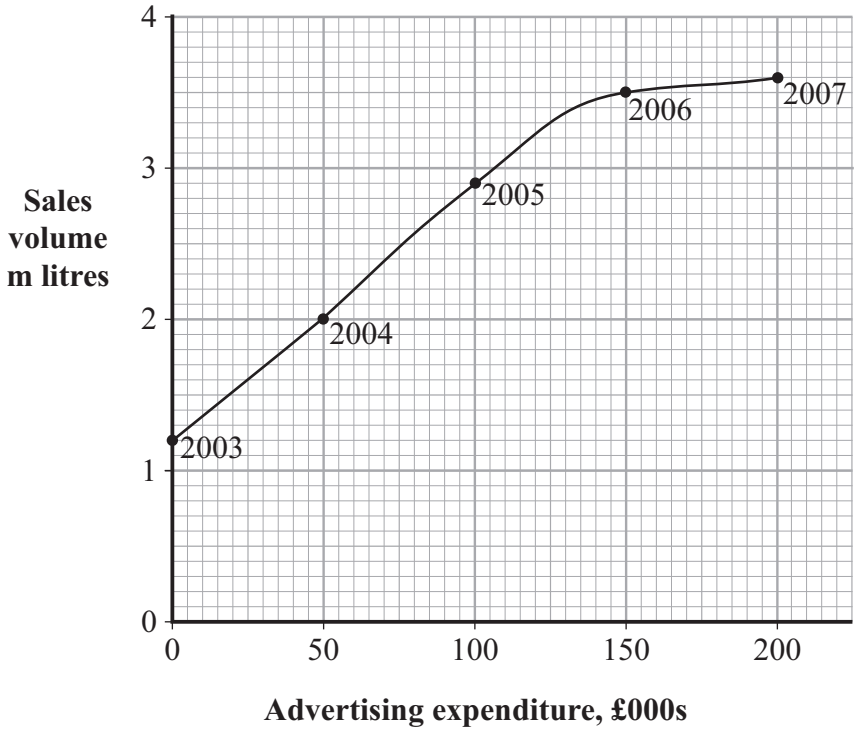
Read the Case Study and answer **all** the questions that follow.

## Anyone for juice?

"Did you hear that Home Farm has cut down all its apple trees and is replacing its orchard with other crops? Apparently, the owner lost a contract to supply Tesco. He could not compete with foreign growers. I think that we may have to consider this too, much as I would regret ending a 200-year-old tradition of apple-growing on our farm," moaned Bill Frith, the owner of Place Farm, to his son Joe.

Joe was less downbeat, "We are lucky that we still sell most of our apples to independent retailers who pay reasonable prices. However, many of these small shops are closing down so we need to think of ways of adding value to our own apples. I have been looking at the market for juices made from fresh fruit rather than from concentrates. I found some market data from a 2007 copy of 'Marketing World'. Apparently, shoppers are turning away from cheap juice drinks towards genuine fresh juices, resulting in increasing sales of these. The magazine included a case study of Fruitella, one of the leading fresh juice suppliers. The company claims that since it started advertising five years ago, its sales have tripled. I've kept the graph used in the article." He found the graph and showed it to Bill (**Figure 1**).

**Figure 1: Fruitella – Sales volume and advertising expenditure, 2003–2007**



Bill responded, "Let's not get ahead of ourselves. We can't think about advertising as we haven't got a product yet! I suppose we could look into converting one of the old barns into a juice pressing and packaging plant. We could supply our existing retailers with fresh juices as well as fruit. But all of this would cost money and we have already reached our overdraft limit. We would need to make this idea profitable as soon as possible. How much juice do you think we would need to sell to break even?"

"I will calculate that," said Joe, "but I was thinking of getting into the supermarket sector straight away. They would offer lower prices but bigger orders and delivery costs would be lower as we would take produce just to their regional distribution depots. I'll get some figures together so that we can talk about the options."

Joe drew up two tables of data, with the help of Place Farm's accountant, and showed them to his father three weeks later. "We assumed that all costs and revenues would be in cash," Joe explained.

**Table 1: Marketing, cost and investment appraisal data for fresh fruit juices**

| | **Option A Sell to independent retailers** | **Option B Sell to supermarkets** |
|---|---|---|
| Initial capital cost | £400 000 | £600 000 |
| Annual fixed operating costs | £100 000 | £110 000 |
| Price per litre paid to farm | £0.50 | £0.35 |
| Variable costs per litre (including fruit, labour and vehicle fuel costs) | £0.20 | £0.10 |
| Payback period (at maximum sales) | 2 years | 2 years 3 months |
| Net Present Value (NPV) in first five years (at maximum sales). 12% discount rate | Not yet calculated | £354 000 |
| Maximum annual capacity | 1m litres | 1.5m litres |
| % annual increase in sales of fresh fruit juice from each type of retailer (2005-2007) | 2 | 12 |

Joe continued, "You can see that the annual fixed operating costs are about the same. I have found out that supermarkets insist on computer controlled machinery as this gives more consistent quality and different packaging options. This machinery needs less labour than that required for **Option A**. Although selling to independent retailers would require a much smaller initial capital investment on production equipment, this option would have higher transport costs and would need more vehicles."

**Table 2: Output, employee numbers and labour costs**

| | **Option A Sell to independent retailers** | **Option B Sell to supermarkets** |
|---|---|---|
| Number of full-time equivalent staff required | 5 | 3 |
| Maximum output (litres) per annum | 1m | 1.5m |
| Labour costs per full-time equivalent staff member per year | £12 000 | £18 000 |

Joe continued, "The labour costs per litre should be less for **Option B** as it requires fewer staff. I contacted one of the largest manufacturers of food processing equipment in the country. They have this really advanced machine where freshly harvested apples can be tipped in at one end to produce the finished juice, already packaged, at the other. It can even produce juices in bottles and containers of different sizes."

"But you are forecasting that we will sell every litre we produce," said Bill. "We will also need to think about staffing. At present, we employ only two part-time workers in September and October for picking. But juice production must go on all year, as the product will have to be fresh. That means that we will have to import apples to ensure a regular supply. Also, surely more fruit juices are sold in the summer months – so what will the seasonal sales pattern be? We will need to consider employing full-time staff with some skills in operating equipment."

"Yes, and IT skills too if we use CAM (Computer Aided Manufacture)," replied Joe. "We will also need training on this equipment and on the computer software that we might have to use for stock control and storing production data. We will have to decide on what type of staff to recruit, how many we will need and when we will need them. This will all take time which is a pity because I am really keen to get this project started as soon as possible."

"I don't think we need to worry about staffing yet," suggested Bill. "With unemployment three times the national average in our area, getting staff will not be a problem. Finance is an issue though. We could sell part of the lower field to raise some capital but that would depend on getting planning permission to build on it. Also, how do we go about organising this project? It's bigger than anything we have tried before, so perhaps we need to get some help from professional project managers. I know you want to start stripping out the old barn today, but we need to plan this carefully."

**Appendix A: 12% discount factors**

| End of year: | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | 0.89 | 0.79 | 0.71 | 0.64 | 0.57 |

**1** (a) Analyse the likely benefits to Bill and Joe of undertaking detailed sales forecasting before making the final decision about the juice project. *(8 marks)*

(b) Discuss the usefulness of the data in **Figure 1** (page 2) when setting the marketing budget for the juice project. *(12 marks)*

**2** (a) To what extent will effective workforce planning determine the success of the juice project? *(14 marks)*

(b) Using data from **Table 2** and assuming maximum output levels:

(i) Calculate the labour productivity for **each** of the two production methods. *(3 marks)*

(ii) Calculate the labour costs per litre of juice for **each** of the two production methods. *(3 marks)*

**3** (a) Analyse the possible limitations of using critical path analysis in the planning and management of the juice project. *(8 marks)*

(b) Assess the advantages **and** disadvantages of using IT to help with the operations management of the juice project. *(12 marks)*

**4** (a) (i) Calculate the annual net cash flow from **Option A**, using the data in **Table 1** and assuming maximum output. *(2 marks)*

(ii) Calculate the Net Present Value for **Option A**, for the first **five** years of operation using your result from **4(a)(i)**. (12% discount factors are given in **Appendix A**.) *(4 marks)*

(b) Taking into account all of the information, would you advise the farm to choose **Option A** or **Option B**? Justify your answer. *(14 marks)*

**END OF QUESTIONS**

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