

## *Appendix three*

### **NOTES ON CASES AND PROBLEMS**

#### **CHAPTER 1**

##### **Doppler system**

In the Doppler system of aircraft navigation two beams of radio waves are aimed at the ground from transmitters under the fuselage, the forward beam striking the ground slightly ahead of the aircraft and the back beam slightly astern; both alternate twice each second from port to starboard. The forward beam signals reflected back to the aircraft are increased in frequency in proportion to its speed over the ground, the back beam signals decrease. The difference in frequency is measured automatically to give the navigator an accurate indication of the speed of the aircraft and of the drift angle so that the course can be corrected accordingly. This in turn has led to the development of automatic flying and landing devices. The first pilotless aircraft successfully completed an Atlantic crossing as long ago as 1947.

##### **Tank refurbishers**

Instead of cutting off both ends of a tank only one end needs to be removed. Cleaning and painting can be performed adequately in this way. It also saves the cost of re-welding both ends of the tank.

##### **Keeping prices competitive**

Organisations can often disguise price rises, permanent or temporary, by making it appear that no price rise is in fact occurring. This can be achieved in any one of the following ways:

- 1 The discount structure can be altered so that the total profit to the company is increased but the list price to customers remains the same.
- 2 The minimum order size is increased so that small orders are eliminated and overall costs thereby reduced.
- 3 Delivery and special services are charged for.
- 4 Invoices are raised for repairs on purchased equipment.
- 5 Charge for engineering, installation and supervision.
- 6 Customers are made to pay for overtime required to get out rush orders.
- 7 Interest is collected on overdue accounts.

- 8 Lower margin models in the product line are eliminated and more profitable ones sold in their place.
- 9 Escalator clauses are built into bids for contracts.
- 10 The physical characteristics of the product are changed – e.g., it is made smaller.

### **Price and innovation**

Unless Sally feels confident that her firm can take on the role of market leader, it would probably be better to hold prices steady – but there may be more creative solutions!

## **CHAPTER 2**

### **Perceptual block**

There are in fact 18 occurrences, but most people do not get it right first time despite having at least two chances to read through and count the occurrence of the letter.

### **Why are 1996 coins worth more than 1984 coins?**

Because there are more of them – 12 more to be precise.

### **The clock problem solved**

Hint: normal sum of clock numbers  $1-12 = 78$  not divisible into whole numbers when divided by 4. Need to artificially find an extra 2. The answer usually involves reversal of the IX (or IV if this is used instead of IIII).

## **CHAPTER 4**

### **Seven letters problem**

SUPERMARKET

### **Parcel delivery problem**

Reducing the number of sorters, introducing a clear system of coding to identify relevant delivery vans, and training sorters on how to implement such a system.

## **CHAPTER 6**

### **Reducing wear and tear**

In order to reduce the amount of resurfacing work on motorways the white lines should be repositioned every few years. Resurfacing costs, it was estimated, could be reduced substantially as a result since repair work would need to be done at considerably longer intervals.

## **CHAPTER 7**

Points about 'Challenging assumptions: what can we take for granted?'

Total expense would go up after outsourcing components because fixed costs had not been reduced, but one still had to pay suppliers for components. The assumptions must also include either that the fixed cost can be reduced (e.g. plant, machinery, etc. sold off, etc.) or that fixed costs are relatively small in relationship to the savings that can be achieved by outsourcing. Outsourcing only some of the components means that the remaining components still produced by the company must now shoulder an increased overhead of fixed costs, thereby making the possibility of outsourcing these components a more attractive proposition.

Over-utilisation of assets, such as assembly plant, leads to the creation of extra inventory and not extra sales. Inventory absorbs overheads and is shown as an asset in the balance sheet and can therefore give a misleading picture of the company's financial position.

The CEO resigned because he must have known the true state the company was in. Subsequently many thousands of workers were laid off and the company nearly went out of business. The build up of inventory given a significant increase in demand for the firm's products might have resulted in a favourable situation for the company as its inventory would have transformed into sales and generated cash-flow and profit. Any other scenario was a recipe for disaster.