**CIS319, Examiner's Report, Zone B, 2007**

**General remarks**

I am pleased to say that the general standard of answers in this year's paper was good. However, there is still the old complaint that answers are still frequently on the brief side.

This is often due to lack of knowledge and students' inability to go into sufficient depth in their answers. Sometimes I feel it is due to a misconception on the part of students that a brief answer that is to the point is sufficient. However, 45 minutes to answer a question is quite a long time and students should use all of that time to aim for the best possible answer, rather than one that is just adequate.

Secondly, there still appears to be too much reliance on the subject guide and not enough information coming from other sources, such as the journals *Decision Support Systems* and *Management Science* and other material from the Internet.

**Question 1**

This was a popular question and was generally answered well. This was particularly true in cases where candidates provided a straightforward description of the components of a decision support system and their function, such as models, model-based management system, database, database management system and dialogue generation management components. However, suggestions as to how such a system might improve home deliveries in practice were not so forthcoming.

For example, the database could include customer details such as name, address, telephone number, previous items ordered and previously preferred delivery times. This would help with selecting items with appropriate 'use by' dates rather than off loading goods with short shelf life left. This is a common complaint of customers ordering food products online. The model base could include transportation algorithms for designing shortest routes for delivery. In addition, algorithms for efficient packing of delivery trucks, depending on the size of orders, could be used. Predictive analysis could help with stock control with regard to future orders. Design of the dialogue generation management system should depend on the type of user and the degree of sophistication of the applications. All these applications can be seen as minimising costs, shortening delivery times and keeping customers satisfied.

## Question 2

Part (a) of this question was answered quite well and I reproduce the six equations below:

$$Qd = f(Y, Ph, Pa, ER) \quad \text{demand model}$$
$$Qs = f(Ph,F) \quad \text{supply model}$$
$$ER = f(Ms, Md) \quad \text{exchange rate model}$$
$$R = f(F, Qd, T) \quad \text{revenue model}$$
$$C = f(Qs, A) \quad \text{cost model}$$
$$\Pi = f(R, C) \quad \text{profit model}$$
$$Qs = Qd \quad \text{equilibrium condition.}$$

Part (b) was not answered so well. The focus of the question was to compare Robert Blanning's metagraphs with Geoffrion's Structured Modelling Technique. In fact, too many candidates explained Blanning's normal forms in great depth rather than comparing the two methods on the basis of their graphical representation at a more general level. The essence of the comparison was the fact that Blanning's metagraph is the basis of a single organisational model incorporating all five sub-models, showing their inter-dependency, removing redundancy and perhaps indicating the presence of cycles. Geoffrion's Structured Model should have been explained in terms of the Elemental Structure, the Generic Structure and the Modular Structure. These different approaches could be compared according to the following criteria as laid down by Geoffrion:

- ability to accommodate all modelling representations
- independence of the solver from the model
- representational independence between mode and data
- immediate expression evaluation
- support all stages of the modelling life cycle.

## Question 3

This question was answered reasonably well. Most candidates selected suitable dimensions such as those I have listed below.

An answer should focus on sales revenue and the various dimensions that could be used to slice and dice this data. The present data would permit dimensions such as:

- sales revenue per particular book over a unit time period broken down by author
- title or publisher
- sales revenue per customer order
- total sales revenue per customer over a specific time period
- sales revenue per geographical region
- sales revenue per seasonal variation
- derived statistics could give predictions on future orders and sales revenue.

However, the part of the question dealing with new data requirements and the type of managerial questions that the database might answer was not tackled so well.

Additional data that would be helpful is the organisation of books into categories such as fiction and non-fiction, then into subcategories such as romance, crime, health, DIY, etc. This would allow a further dimension based on book category.

Various questions could be answered from such a model, e.g.:

- the contribution to total sales revenue by a particular author, title or publisher
- the contribution to total sales revenue per customer bookstore
- the contribution to total sales revenue per region
- the contribution to total sales revenue of a particular category of fiction or non- fiction.

**Question 4**

The first part of this question called for a straightforward comparison and contrast of an MIS and EIS and was answered reasonably well.

Most candidates managed to outline the similarities in the monitoring and alerting functions of both a MIS and an EIS and how it corresponds to the Intelligence Phase and the Review Phase of Herbert Simon's theory of human decision-making. However, answers should have stressed that the essential difference is between the levels of decision-making, namely, that a MIS is used by middle management to highlight possible tactical problems and an EIS is used by a chief executive or very senior management to highlight possible strategic problems.

Unfortunately, candidates seemed to struggle to provide a possible example from the oil industry. Though no-one was expected to be an expert on the oil industry, students could have used their imaginations based on the standard functions of an EIS:

- Status reporting: oil flow production, quantity of oil in storage, price per barrel, total revenue per time period, etc.
- Drill down facilities: the above indicators broken down by continent, country, region, etc.
- Exception reporting: indicating differences between budgeted oil production, sales revenue, total costs, etc.
- Enumeration of critical success factors: market share, growth in market share, total gross profit
- Further data analysis: predicting future demand and supply.

**Question 5**

This question was fairly popular and was answered reasonably well. However, as in many applied questions, candidates were much better at giving a theoretical answer rather than entering into the spirit of the question and arguing the case from the point of view of a systems analyst talking to a manager.

For example, in considering the four basic hardware configurations the argument should have been put that, given the nature of the business, perhaps the Remote Decision-Making Architecture or Teleconferencing is the most appropriate. This is because of the dispersion of the salesmen and the temporal nature of the problems being analysed.

Software arguments should enumerate the advantages of the Nominal Group Technique in disciplining discussion, which would seem very relevant to salesmen who have a reputation for being argumentative, and also, how a GDSS complements NGT as it economises on time, given the parallel nature of inputting information from the group. Anonymity can also be assured and easier access to past stored information and analytical tools help in the decision-making process.