

Data Management

As usual, in this paper candidates were required to pass not only the examination as a whole, but to pass two specific criteria – “Design a database” and “Model data objects”. Questions 1 and 2 examined the first criterion, and questions 3 and 4 the second. Candidates generally performed better on the first of these criteria than on the second.

As in all previous examinations, the examiner was looking for an ability to apply knowledge to do specific things related to a particular business scenario. All questions set were centred on the given scenario. Students had been provided with a copy of the scenario in advance, and it was also included in the question paper. In addition, students were able to bring into the examination any written or printed paper-based materials.

As usual, in spite of warnings in previous reports, it is clear that candidates are still reproducing answers brought to the exam rather than attempting to address the issues raised in the current exam question. There was a clear division in the candidates, between those candidates who attempted to answer the questions on their merits, and those who reproduced memorised stock answers.

With that in mind, this report gives general comments and principles, but not model answers.

Having said that, it was pleasing to be able to pass a higher proportion of the candidates than in most recent examinations.

The following comments are made about each question.

Question 1

This question examined the criterion “design a database” and gave candidates a requirement based on the scenario relating to using billing data to produce analyses of sales data. The question then asked that this information be developed into a data model using some generally understood technique.

Most candidates showed that they could produce a diagrammatic representation of a data model. Many candidates then however showed that they did not understand the process, because they included unrelated aspects of the scenario, clearly reproducing models drawn during classroom studies.

The second part of the question asked candidates to convert their model into a set of relations, and to identify primary and foreign keys.

As in the first part, candidates either dealt with the data given, or attempted to document irrelevant components.

Question 2

This question examined the criterion “design a database” and asked candidates to comment on how certain user requirements would impact on the database design needed to record and assert that diary notes of evidence collected was not lost or tampered with.

Some candidates clearly recognised the need for INSERT only data and to treat the text entries as one would treat recording of financial transactions, where a reverse transaction can be recorded to cancel out an erroneous transaction, but transactions are never deleted. The diary is thus in essence an audit trail of entered data.

There were opportunities to talk about user authentication, and the automatic timestamping of data.

Question 3

This question examined the criterion “model data objects” and gave candidates an E-R diagram relating to the scenario, and asked them to convert the diagram into third normal form (3NF) database relation/table (or tables) and verify that this had been done properly.

Producing tables presented few problems, but verifying 3NF was not done well by many candidates.

Either candidates did not know about functional dependencies, or else they had only a mechanical understanding of normalisation. Just because textbooks tend to show some unnormalised data, then decompose it through 1NF and 2NF into 3NF, does not mean this needs to be part of the answer to this question. If, as should often be the case, tables are written down that pass the tests for 3NF or BCNF straightaway, there is then no need whatever to mangle them into supposed 2NF or 1NF just to prove that normalisation has been done.

Question 4

This question asked candidates to describe the steps they would carry out to design a database and implement an application for a given requirement.

As expected in a largely descriptive question, answers walked through the life cycle, but more is required than this. The scenrion issues need to be woven in to the narrative. For example, if you say “Interview users” you must then go on to say who (using the scenario) and then say why – what do you hope to learn.