

1999 Paper 2 Question 10

Structured Hardware Design

A design is required for an electronic system to collect votes from the audience in a television game show. Each of up to 1000 seats in the audience will have an *audience station* and there will be a *master station* for the floor manager. Output from the system will be video and this will feed monitor displays in the studio and be included in the broadcast programme.

- (a) Sketch a block diagram of the overall system, showing clearly the various units and the signals which make up the cables which run between them. [5 marks]
- (b) Specify the controls and indicators on the front panel of the two types of station. Give a pair of state diagrams of the system, one as seen by the audience and the other as seen by the floor manager. [5 marks]
- (c) Given that a profitable return on the sale of three complete systems is required, describe the components and technology that should be used in the units. [5 marks]
- (d) Discuss the advantages and disadvantages of including a PC inside the floor manager's station, in terms of cost, ease of use and whether a custom or standard operating system should be used. [5 marks]