



CEM 7109/CEX 7109 Management of the Design phase and Quality Control

FINAL EXAMINATION - 2007

10 022

Time Allowed : Three (03) Hours

Date : 2008 - 04 - 30 (Wednesday)

Time : 0930 - 1230 hrs.

Answer four (4) questions, selecting at least one (1) question from section B.  
*Please write the answers to Sections A and B in Two Separate books.*

**SECTION A**

*Note: Relevant field examples may be used to clarify your answers.*

1. a) Discuss the responsibilities and functions of the Design Team Leader to validate the statement in BS 7000: part 4: 1996 that from the design management point of view, 'the most significant management function undertaken within a construction project is that of the Design Team Leader'. (9 marks)
- b) Discuss how a client's time policy affects the type of construction contract selected. (8 marks)
- c) Discuss why a documented procedure as required by the ISO 9001 for the Control of Documents is essential for the design team. (8 marks)
  
2. a) The BS 7000 states that the fundamental requirements of a project and the Client's acceptance criteria should be clearly understood and agreed to, by both the Client and the Design Team. Discuss the following in relation to the case when the client's financial policy favours a 'lowest cost' option for the project:
  - i) the types of construction contract that may be suitable and consequent implications for management of the design phase and design consultancy; (9 marks)
  - ii) the use of 'cost planning' in this context. (8 marks)
- b) Describe and discuss the procedure for a Quality and Cost based selection of Consultants (QCBS). (8 marks)
  
3. a) Discuss how you would decide on the timing and conduct of Design Reviews and the topics that should be clarified, discussed and recorded at such reviews in order to ensure the quality of a project. (10 marks)
- b) Specifications for materials and equipment may be given by three methods. Discuss these, giving an example where each would be the most appropriate for use. (6 marks)
- c) Explain what you understand by 'Life cycle costing' and discuss how it could be adapted to gauge a project's long-term environmental impact. (9 marks)
  
4. a) Discuss whether you agree that 'Quality, (regarded as conformity with defined requirements, customer satisfaction), starts with the designers and if the cost and quality of a project are determined in the early stages of a project. (10 marks)
- b) Explain the following terms in relation to the conditions of consultancy agreements:
  - i) Skill, Care and Diligence of services of the consultant
  - ii) Professional Liability of the Consultant
  - iii) Obligation of the Client with regard to Data and Approvals. (9marks)
- c) Explain what you understand by *unbalanced* bids and briefly describe the procedure for evaluation of unbalanced bids. (6 marks)

## SECTION B

5.

- a) After opening construction Tenders the primary concerns of the Client/Engineer will be the selection of the Tenderer who will be awarded the Contract for the execution of works. Describe factors to be considered in Evaluation of:
- (i) Small/medium size projects
  - (ii) Large and complex projects
- (8 marks)
- b) The contract between the Client and the Contractor consists of several documents. Identify the most relevant Contract Documents necessary for managing quality at the construction site and describe in what way these are useful for controlling quality of the Works.
- (8 marks)
- c) Describe how a Contractor would minimize the effects of the following factors on the quality of construction work. Illustrate your answer under each of the factors with suitable examples:
- (i) Poor quality of material
  - (ii) Incompetent workers (both the Contractor's own and the Subcontractors')
  - (iii) Lack of supervision
- (9 marks)

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- a) Describe factors affecting:
- (i) Construction product quality (at site level)
  - (ii) Cost of Quality (COQ)
- (6 marks)
- b) For assuring quality of construction works, personnel performing them must be competent on the basis of appropriate education, training, skills and experience. What requirement or requirements in ISO 9000 would deal with this aspect of human resources available within the company and hired from outside? Illustrate your answer using examples.
- (9 marks)
- c) Quality planning is a crucial step in managing quality at the construction stage. It should be done well before the construction work is commenced. If you are the Project Manager for a construction project undertaken by an ISO Certified construction company, briefly describe how quality planning would be performed and the contents of the 'project quality plan'.
- (10 marks)