

Ollscoil na hÉireann, Gaillimh
National University of Ireland, Galway
SECOND SEMESTER EXAMINATIONS, 2000
Fourth Environmental Engineering Examination

CONSTRUCTION OPERATIONS II

Professor R. A. Falconer
Professor P. O'Donoghue
Mr. M. Barrett
Miss B. Joyce
Mr. P. Ridge
Mr. G. Gibney

Time Allowed: Two hours. Answer three questions
Use separate answer books for each question

1. a) Explain the following:
 - i) Open tendering
 - ii) Selective tendering
 - iii) Domestic Sub-Contractor
 - iv) Nominated Sub-Contractor
 - v) PC sum
 - vi) Provisional sum.
 - b)
 - i) What are the disadvantages associated with open tendering?
 - ii) List the documents that form the Tender Documents.
 - c) Discuss the tender procedure for the Contractor.
-
2. a) Carry out a calculation to compare the hourly costs of hiring and buying an item of plant using both the *straight-line method* and the *interest on capital outlay method* given the following data:

Hire Cost per Hour = £12.00
Capital Cost of Plant = £80,000.00
Expected Useful Life = 6 years
Yearly working hours per year = 1,500
Resale value after 6 years = £20,000
Interest Rate = 5%
Add 2% costs for insurance
Add 10% costs for maintenance

P.T.O.

- b) List three types of cofferdams and describe them under the following headings:
- i) Construction details
 - ii) Ground conditions
 - iii) Stability
 - iv) Watertightness
- c) List and describe three methods by which ground water can be permanently excluded from an area in which construction works are to be carried out.
3. a) Answer two only of the following three sub-questions:
- i) Describe the two main elements in the management structure of a typical Local Authority and give examples of the division of powers
 - ii) Describe the process for obtaining a road closure.
 - iii) Describe the essential elements of a wayleave and the rights and obligations that it confers
- b) Broadly describe the purpose of a Planning Authority's Statutory County Development Plan, including general objectives and what is defined as development under the Planning Acts.
- c) Answer 1 or 2 of the following two sub-questions:
- i) Outline EU Procurement Policy, its purpose, types of procedures and general requirements. Name three relevant directives.
 - ii) Give the reasons for the introduction of *Condoc* and give general examples of the contract elements it attempts to control and regulate.
4. a) Discuss the construction industry's safety record and describe the difficulty of controlling and managing safety in comparison to other industrial sectors. Refer to accident and fatality statistics.
- b) i) Describe the typical types of accidents and occupational ill health associated with work on construction sites.
- ii) Outline the approach to safety required to eliminate potential hazards and reduce the risks of accidents or ill health.
- iii) List some of the basic measures to be taken on a site in order to promote a safe and healthy working environment.
- c) Under the *Safety, Health and Welfare at Work (Construction) Regulations 1995*, when should the Health and Safety Authority be notified of the existence of a construction site?
- d) i) Discuss the appointment of project supervisors for a construction project.
- ii) List the main duties of the project supervisor at the design stage and the project supervisor at the construction stage.
- e) Discuss the main purpose of initiating the Health and Safety plan at the design stage.

END