

**Ollscoil na hÉireann, Gaillimh**  
**National University of Ireland, Galway**  
**FIRST SEMESTER EXAMINATIONS, 2000**  
**Third Year Civil and Environmental Engineering Examination**

**CONSTRUCTION OPERATIONS I**

Professor R. A. Falconer  
Professor P. O'Donoghue  
Mr. P. Burke  
Miss B. Joyce  
Mr. R. Tobin

**Time Allowed: Two hours. Answer three questions**

**Use separate answer books for each question**

1. a) Write notes on the following subjects as applied to civil engineering contracts:
  - i) Clause 14 Programme
  - ii) Method of Measurement
  - iii) Bill of Quantities
- b) Describe the procedure for preparing monthly statements for interim certificates, describing each of the components which together comprise the monthly statement.
  
2. a) List three types of earthmoving plant. For each type listed:
  - i) Give examples of the types of tasks for which they could be used on a civil engineering project.
  - ii) Describe how the earthmoving is carried out.
  - iii) Draw a simple labelled sketch.
- b) List and describe three methods by which groundwater can be temporarily excluded from an area in which construction works are to be carried out.

**P.T.O.**

3. a) Describe briefly, with the aid of a simple labelled sketch, the method of construction of a sheet pile wall.
- b) List and discuss four guidelines for good practise of slinging and lifting individual members in the erection of a steel-framed structure.
- c) Describe three methods of preventing corrosion in structural steel members.

4. The National Development Plan published in November 1999 envisages that a major programme of Infrastructural Development Work (£40.588 Billion) will be completed between 2000 and 2006.

In order to achieve this programme, a number of contract forms are being introduced which will involve co-operation between the private and the public sectors.

The main forms of Public Private Partnerships are:

*Design and Build (DB)*

*Design, Build and Operate (DBO)*

*Design, Build, Operate and Finance (DBOF)*

*Concession*

- a) Discuss briefly each of these Contract forms against the following headings:

- i) Features
- ii) Potential Application
- iii) Advantages
- iv) Disadvantages
- v) Resident Engineer's role
- vi) Environmental Impact Statement

- b) Provide some Irish and international examples of where these contract forms have been used.

**END**