

Ollscoil na hÉireann, Gaillimh
National University of Ireland, Galway
SECOND SEMESTER EXAMINATIONS, 2000

Second Civil Engineering Examination

PRINCIPLES OF BUILDING

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Time Allowed: Two hours. Answer four questions

1.
 - a) Sketch a cross-section through a cavity wall, labeling the main features.
 - b) Describe the advantages and disadvantages of a cavity in external wall construction for a domestic dwelling.
 - c) Describe the properties required for materials used as damp-proof course in cavity walls and provide four examples of such materials.
 - d) List three types of foundations that are used for buildings.
For each type listed
 - ii) State the types of loads they are used to support
 - iii) Provide one labeled sketch illustrating a typical example.
2.
 - a) Discuss the factors which must be taken into account in the selection of the type of precast concrete floor to be used.
 - b) List and briefly describe three types of precast concrete floor. For each type listed provide one labeled sketch illustrating a typical example.

3. a) A building is required to satisfy functional requirements and performance requirements.
- Explain what the functional requirements might be.
 - List 6 performance requirements, giving brief explanations of what each means.
- b) Discuss the principle issues to be considered in ensuring the durability of a building.
4. a) Describe the principle issues to be considered in the design of artificial lighting and ventilation for a building.
- b) You are checking a building for compliance with the Building Regulations Second Schedule Part L on Conservation of Fuel and Energy. You are making a preliminary checklist of energy contributions and losses to be taken into account for the calculation of the Heat Energy Rating (HER) of the building. List items to be included on this list.
- c) In addition to the Heat Energy Rating being within permissible levels, the building should satisfy 6 other requirements. What are they?
5. a) i) Explain the basis of the degree day method of comparing heating requirements in different locations.
- Define weather factors.
- b) i) What is a psychrometric chart?
- With the aid of a free-hand sketch of the chart indicate how you would determine for a particular air sample, the following, given the temperature and corresponding specific volume
 - Enthalpy
 - Moisture Content
 - Dew Point
- c) Explain what is meant by electric potential
- d) A 220V socket circuit is protected by a 20 Amp fuse and the resistance of the earth loop circuit is 15 Ohms . Discuss the suitability of the circuit earth fault protection under these conditions.

END