

**CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ**

Autumn Examinations 2012

Module Title: CS3 Building & Environmental

Module Code: BULD 7003

School: Building & Civil Engineering

Programme Title(s): Bachelor of Science in Construction Economics – Year 3
Bachelor of Science in Construction Management – Year 3
Bachelor of Science (Honours) in Construction Management – Year 3
Bachelor of Science (Honours) in Quantity Surveying – Year 3

Programmes Code(s): CCECO_7_Y3
CMNGT_7_Y3
CCNMG_8_Y3
CQTSU_8_Y3

External Examiner(s): Ms Rita Scully, Mr Tim Cahalane, Mr Noel Dempsey,
Mr Gerry O'Rourke

Internal Examiner(s): Ms Maria Cullinane

Instructions: Answer ALL questions

Duration: 2 Hours

Sitting: Autumn 2012

Requirements for this examination:

Note to Candidates: Please check the Programme Title and the Module Title to ensure that you have received the correct examination. If in doubt please contact an Invigilator.

- Q1. (a) Sketch and describe the **four** stages in the development of a compartment fire. (5 marks)
- (b) List the **two** objectives of smoke control systems. (2 marks)
- (c) Building Regulations 1997 Technical Guidance Document B sets out provisions in sections B1 to B5 to deal with different aspects of fire safety.
Identify four of these five sections. (4 marks)
- (d) Describe, with the aid of a sketch, the operation of an aspirating smoke detector. (6 marks)
- (e) Discuss the actuation of fire dampers by smoke detectors. (4 marks)
- (f) Explain the operation of **both** a wet **and** a dry sprinkler system. (6 marks)
- (g) What are the building height recommendations for rising mains? (3 marks)
- Q2. (a) Sketch the refrigeration cycle, indicating pressures and refrigerant states. (6 marks)
- (b) Describe the operation of Chilled Ceilings and suggest a situation that would be suitable for their use. (4 marks)
- (c) Describe, giving examples, the **three** categories of contaminants in a cleanroom. (6 marks)
- (d) List **3** common examples of steam end-use equipment. (3 marks)
- (e) Discuss District Heating in Ireland. (5 marks)
- (f) Identify three typical applications for CHP providing reasons. (6 marks)

- Q3. (a) Explain the use of a three-phase power supply in a building containing single-phase equipment only. (4 marks)
- (b) Discuss low voltage cable management. (8 marks)
- (c) Describe the way in which **both** types of rotary UPS continue to drive the motor/generator unit in the event of mains failure. (4 marks)
- (d) Sketch and label the basic layout of a structured cabling system. (7 marks)
- (e) In the design of service duct, it is often appropriate to build up the duct system from three types of ducts. List these (3 marks)
- (f) Describe **two** properties of plant and equipment and characteristics of normal building construction that limit the practical location of plantrooms. (4 marks)
- Q4. Discuss a case study of a fire which you have researched. (10 marks)