

**CORK INSTITUTE OF TECHNOLOGY  
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ**

**Semester 2 Examinations 2016**

**Module Title: CS1 Construction Materials And Structures**

**Module Code: BULD6011**

**School: Building and Civil Engineering**

**Programme Title(s): Bachelor of Science in Construction Management**

**Programmes Code(s):**  
CCONS\_7\_Y1  
ECTWB\_7\_Y1  
CCNMG\_8\_Y1  
CQTSU\_8\_Y1

**External Examiner(s): Mr Ger Harrington Dr Mike Murray**

**Internal Examiner(s): Mr T. Buckley**

**Instructions:**  
Section A - 3 questions, answer 2 questions  
Section B - 3 questions, answer 2 questions  
Separate answer books to be used for Section A and B

**Duration: 2 Hours**

**Sitting: Summer 2016**

**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.

**Section A**

- Q1.** (a) Explain how a bulk density aggregate test is carried out. (10 marks)
- (b) Explain the importance of aggregates in the concrete mix. (5 marks)
- (c) Detail (with suitable sketches) how concrete beams are reinforced with steel. (10 marks)
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- Q2.** (a) Discuss using suitable sketches the main defects in timber. (10 marks)
- (b) What is the purpose of timber seasoning? (5 marks)
- (c) Describe a test to establish the strength of timber. (10 marks)
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- Q3.** (a) Explain how hot rolled steel is produced. (5 marks)
- (b) What are the two main methods used for the fire protection of steel? (5 marks)
- (c) Explain why plasticisers are used in the production of plastics? (5 marks)
- (d) Explain how plastics behave in a fire. (5 marks)
- (e) What materials are used in the manufacture of glass? (5 marks)

## Section B

**Q4.**

- a) In terms of construction, define a Structure? **(6 Marks)**
- b) Identify and describe structural form. Use sketches where appropriate to help explain your answer. **(10 Marks)**
- c) Identify and explain the types of forces that act on a Structure. Use sketches where appropriate to help explain your answer. **(9 Marks)**

**Q5.**

- a) In relation to structural design explain the term Seismic load. Use sketches where appropriate to help explain your answer. **(9 Marks)**
- b) Identify and describe Seismic Isolation Systems. Use sketches where appropriate to help explain your answer. **(8 Marks)**
- c) Identify and describe of Energy Dissipation Devices . Use sketches where appropriate to help explain your answer. **(8 Marks)**

**Q6.** Explain each of the following terms, include sketches where appropriate.

- a) Force **(6 Marks)**
- b) Reaction **(6 Marks)**
- c) Stress **(6 Marks)**
- d) Moment **(7 Marks)**