



**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER I  
SESSION 2013/2014**

COURSE NAME : CIVIL ENGINEERING MATERIALS  
COURSE CODE : BFC10502  
PROGRAMME : 1 BFF  
EXAMINATION DATE : DECEMBER 2013/JANUARY 2014  
DURATION : 2 HOURS  
INSTRUCTIONS : ANSWER **FOUR (4)** QUESTIONS ONLY

THIS QUESTION PAPER CONSISTS OF **THREE (3)** PAGES

- Q1** (a) Describe briefly the cement production process. (5 marks)
- (b) Explain briefly the global environmental impact of cement production and carbon sequestration strategy. (10 marks)
- (c) Propose a group project to determine standard consistence, initial and final setting times of cement. Illustrate with a sketch of the Vicat test apparatus, statement of the method and the typical test results. (10 marks)
- Q2** (a) Sketch and label an aggregate crusher to produce recycled aggregate. (5 marks)
- (b) Describe briefly the method to determine the free water on fine aggregate. Illustrate with a field adjustment calculation. (10 marks)
- (c) Explain the effect of the shapes of recycled aggregate and the particle size distribution on the strength of concrete. (10 marks)
- Q3** (a) Sketch and label the slump test apparatus to determine concrete workability. (5 marks)
- (b) Sketch graphs on strength development and permeability of concrete under different curing conditions. Explain briefly the water permeability test. (10 marks)
- (c) Explain briefly concrete carbonation and the effect of curing on the durability of concrete. (10 marks)
- Q4** (a) Explain briefly the use of masonry work for affordable home. (5 marks)
- (b) Describe the in-situ production of masonry blocks for a highrise building. (10 marks)
- (c) Specify mix proportion to produce masonry blocks. Propose a group project to complete a fast track single storey building on soft ground. (10 marks)

- Q5**
- (a) Explain briefly the seasoning and preservation of timber. (5 marks)
  - (b) Describe briefly the structural use of timber in the tropics. (10 marks)
  - (c) Explain innovations related to the reuse of timber waste for sustainable construction. (10 marks)
- Q6**
- (a) Describe briefly the corrosion mechanism of steel. (5 marks)
  - (b) Explain briefly the structural use of steel in construction. (10 marks)
  - (c) Propose innovations on a steel framed system for fast track construction. (10 marks)

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