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**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

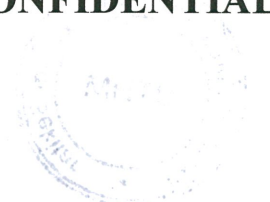
**FINAL EXAMINATION  
SEMESTER 2  
SESSION 2014/2015**

COURSE NAME : CONCRETE TECHNOLOGY  
COURSE CODE : BFS 40603  
PROGRAMME : 4 BFF  
EXAMINATION DATE : JUNE 2015 / JULY 2015  
DURATION : 3 HOURS  
INSTRUCTION : ANSWER **FOUR (4)** QUESTIONS ONLY

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

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- Q1** (a) What is lightweight concrete and briefly explain the production of lightweight concrete. (5 marks)
- (b) Briefly explain the key factors to be considered when designing a high strength concrete mix. (5 marks)
- (c) What is creep and shrinkage of concrete? List the factors that affecting creep and shrinkage of concrete. (7 marks)
- (d) Explain the characteristics of fiber reinforced concrete. Discuss the properties and applications of polymer concrete. (8 marks)
- Q2** (a) Describe the mechanism of sulphate attack on concrete. (5 marks)
- (b) What are strategies can be used to prevent sulphate attack . (5 marks)
- (c) Explain the mechanism of transportation in concrete.. (7marks)
- (d) Discuss the special features of cold weather concreting and hot weather concreting. (8 marks)
- Q3** (a) Give a brief explanation of the **TWO (2)** broad categories of cracking that cause of concrete deterioration. (5 marks)
- (b) What precautions can be taken to ensure good quality concrete in coastal structures? (5 marks)
- (c) Explain the various methods of polymer concrete. (6 marks)
- (d) List **FIVE (5)** deterioration mechanisms that lead to concrete damage. Briefly explain **THREE (3)** of the mechanisms. (8 marks)



- Q4** (a) Define the meaning of pozzolanic material. (5 marks)
- (b) Describe the mechanisms of action of superplasticizer which enable reduction in water demand of concrete by up to 30%. (8 marks)
- (c) Durability of concrete particularly to chemical actions is very much dependent on the quality of concrete in particular the concrete cover. The quality is dependent on the transport or permeation characteristics of the concrete which are the permeability, diffusivity and porosity of the concrete. Explain in detail the influence of these factors, their inter-dependent and how they affect the durability performance of concrete. (12 marks)
- Q5** (a) Define the meaning of Ferro cement. (5 marks)
- (b) What is Mix Design? Explain in detail the various factors governing the selection of mix proportion. (8 marks)
- (c) Reinforced concrete structure is a very versatile construction material. Properly designed concrete structures are both strong and durable. However, concrete structures are vulnerable by number of factors that can cause deterioration. Explain in details the factors that can cause concrete deterioration. (12 marks)

**-END OF QUESTION -**

