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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2021/2022**

COURSE NAME : CONCRETE TECHNOLOGY
COURSE CODE : BFS 40603
PROGRAMME CODE : BFF
EXAMINATION DATE : JANUARY / FEBRUARY 2022
DURATION : 3 HOURS
INSTRUCTION : 1. ANSWER **ALL** QUESTIONS.
2. THIS FINAL EXAMINATION IS
AN **ONLINE** ASSESSMENT AND
CONDUCTED VIA **CLOSE BOOK**.

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

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- Q1** 'Young' concrete is especially prone to cracking. There are many type of crack occurs in slabs. **Figure Q1** show the crack pattern that appear on the surface of slab.
- (a) Name type of crack that shown in the figure. (2 marks)
- (b) List **SIX (6)** factor affecting the crack that mention in Q1(a). (6 marks)
- (c) Justify **SIX (6)** prevention methods to avoid cracking in Q1(a). (6 marks)
- (d) Suggest and describe **TWO (2)** methods to reduce 'bleeding' of a concrete mixture. (6 marks)
- Q2** (a) Some manufacturers claim that application of water-reducing admixtures can lower the cement content and increase the consistency and strength of a reference concrete mixture. Clarify why all **THREE (3)** benefits may not be available at the same time. (15 marks)
- (b) Elaborate the mechanism by which mineral admixtures are able to improve the pumpability and finishability of concrete mixtures. In the amounts normally used, some mineral admixtures are water reducing whereas others are not. Discuss the subject with help of examples. (10 marks)
- Q3** (a) The effect of reduction of the pH value of concrete by these chemicals is known as carbonation. Illustrate and describe the process of carbonation in concrete. (10 marks)
- (b) Seawater contains many dissolved salts. Deterioration such as corrosion, abrasion and chemical attack can occur in sea-front structure. Justify and discuss precautions that can be taken to ensure good quality concrete in coastal structures. (10 marks)
- Q4** (a) Give typical ranges of aggregate unit weights for making structural lightweight, normal-weight or heavy weight concretes. (5 marks)
- (b) Elaborate **THREE (3)** types of natural and synthetic aggregates are used for making lightweight masonry blocks. (15 marks)

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- (c) With coastal and offshore concrete structure directly exposed to sea water, explain the effect of deterioration occur in the tidal zone and illustrate the typical pattern of chemical attack in sea structure from the surface to the interior of concrete.
(15 marks)

– END OF QUESTIONS –

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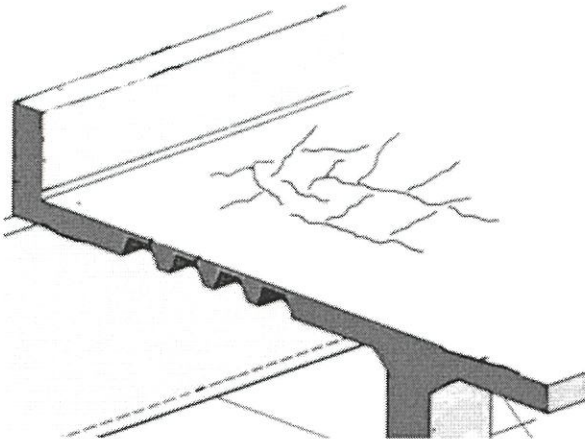


FIGURE Q1

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