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POLITEKNIK
Jabatan Pengajian Politeknik

EXAMINATION AND EVALUATION DIVISION
DEPARTMENT OF POLYTECHNIC EDUCATION

(MINISTRY OF HIGHER EDUCATION)

CIVIL ENGINEERING DEPARTMENT

FINAL EXAMINATION

JUNE 2012 SESSION

CC203 : CONCRETE TECHNOLOGY

DATE : 24 NOVEMBER 2012

DURATION : 2 HOURS (2.30 PM – 4.30 PM)

This paper consists of **FIVE (5)** pages including the front page.
Section A: Short Question (10 questions – answer ALL questions)

Section B: Essay (4 questions – answer 3 questions)

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**DO NOT OPEN THIS QUESTION PAPER UNTIL INSTRUCTED BY THE CHIEF
INVIGILATOR**

(The CLO stated is only for reference)

SECTION A**SHORT QUESTION (40 marks)****INSTRUCTION:**

This section consists of TEN (10) short questions. Answer ALL questions

QUESTION 1

- a. Define the definition of cement. [CLO1:C1] (2 marks)
- b. Explain what is prescribed mix [CLO1:C1] (2 marks)

QUESTION 2

- a. List TWO (2) good concrete mix ratio [CLO1:C1] (2 marks)
- b. State the effect of water on the concrete mix? [CLO1:C1] (2 marks)

QUESTION 3

- a. Define workability of concrete [CLO1:C1] (2marks)
- b. List the factors that influences concrete workability [CLO1:C1] (2marks)

QUESTION 4

Explain the comparison of characteristics strength between steel and concrete in terms of: [CLO2:C2]

- i. Compressive strength (2 marks)
- ii. Tensile strength (2 marks)

QUESTION 5

State **FOUR (4)** characteristics of Reinforced Concrete. [CLO2:C1]
(4 marks)

QUESTION 6

Explain the characteristics of formwork for Reinforced Concrete

[CLO 2:C2]

(4 marks)

QUESTION 7

Describe the meaning of pre-stressed concrete [CLO 2:C2] (4 marks)

QUESTION 8

Precast Concrete is one of the engineering technology improvements in the construction industry.

- a) Define Precast Concrete [CLO 2:C1] (2 marks)
- b) List TWO (2) types of Precast element [CLO 2:C1] (2 marks)

QUESTION 9

State **FOUR (4)** advantages of Prefabrication Technology [CLO 2:C1]

(4 marks)

QUESTION 10

Describe lightweight concrete [CLO 2:C2] (4 marks)

SECTION B**ESSAY QUESTION (60 marks)****INSTRUCTION:**

This section consists of **FOUR (4)** essay questions. Answer **THREE (3)** questions only.

QUESTION 1

- a) Explain the factors that affect the concrete mix design. [CLO1:C1]
(10marks)
- b) Explain the basic concept of concrete mix [CLO1:C1]
(10 marks)

QUESTION 2

- a) State **FOUR (4)** methods of curing in concreting. [CLO1: C1] (4 marks)
- b) Explain **THREE (3)** properties of hardened concrete.[CLO1 C1]
(6 marks)
- c) Slump Test is a practical test in measuring workability of a concrete. Describe briefly the procedure of slump test with the sketch of slumps that may be obtained from the test.[CLO1 : C1] (10 Marks)

QUESTION 3

- a) Reinforced concrete is a type of material used by designers, engineers and architects in the construction. Explain the primary reason for providing reinforcing steel in concrete? [CLO2 : C2] (5 marks)
- b) Reinforcing bars are available in plain bars and deformed bars. Explain and illustrate the surface characteristics of the two bars mentioned. [CLO2 : C2]
(6 marks)

- c) Explain and illustrate the action of a simply supported beam being applied with a load. Show the compressive zone and tensile zone in your illustration.[CLO2 : C2] (9 marks)

QUESTION 4

- a) Explain and sketch the process of producing Pre-stressed Concrete using pre-tensioning method [CLO2 : C2] (8 marks)
- b) State **FOUR (4)** advantages of Prefabrication Technology [CLO2 : C1] (6 marks)
- c) List **FIVE (5)** criteria's of Lightweight Concrete [CLO2 : C1] (6 marks)