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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2016/2017**

COURSE NAME : INDUSTRIALIZED BUILDING SYSTEM
COURSE CODE : BNC 40903
PROGRAMME : BNC
EXAMINATION DATE : DECEMBER 2016 / JANUARY 2017
DURATION : 3 HOURS
INSTRUCTION : ANSWER ALL QUESTIONS

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

UNIVERSITI TUN HUSSEIN ONN MALAYSIA
FACULTY OF ENGINEERING
DEPARTMENT OF INDUSTRIAL ENGINEERING

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- Q1** (a) Explain in timeline, the history of IBS development in Malaysia. (5 marks)
- (b) Describe **FIVE (5)** benefits of IBS (5 marks)
- (c) Discuss the role of CIDB in IBS implementation in Malaysia (5 marks)
- (e) Exhibit the differences between IBS system and conventional construction. (10 marks)

- Q2** (a) Explain, what is Precast Concrete System (6 marks)
- (b) Explain on each item below (9 marks)
- (i) Skeletal Structure
 - (ii) Facades
 - (iii) Corbels
- (c) Demonstrate the construction process of Precast Concrete (10 marks)

- Q3** (a) Discuss **THREE (3)** materials use in Steel Frame System (9 marks)
- (b) Explain **TWO (2)** types of Steel Framing System (9 marks)
- (c) Explain in detail what is Rivet. Sketch the Riveting process. (7 marks)

- Q4** (a) Explain on Block Work System below : (6 marks)
- (i) Dry Cast
 - (ii) Wet Cast
- (b) Discuss in detail type of Concrete Block below: (8 marks)
- (i) Lightweight Concrete Block
 - (ii) Interlocking Concrete Block

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REKADAMBA
KEMENTERIAN
PERKAMPUNAN
SARAWAK
KUALA KEMUNYU
KEMENTERIAN
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- (c) Sketch and explain on the pattern finish below
- (i) Running Bond
 - (ii) Stack Bond
 - (iii) Basket Weave
 - (iv) Half and Full Basket Weave

(11 marks)

Q5 (a) Explain definition of IBS Scoring System

(5 marks)

(b) Base on information below, Evaluate the IBS Score for the project.

	Item	Description
1	Construction Area Construction area for Ground Level Construction area for Level 1 Construction area for Roof	120 m ² 120 m ² 120 m ²
2	Structure System Beam Column Floor Roof Trusses	Precast Concrete Beam Cast-insitu concrete using steel formwork Half Precast floor Pre-made Timber Roof Trusses
3	Wall System Internal Wall External Wall	Precast Concrete Panel Block system
4	Other System Beam Column Wall & Floor Door Window Repetition on horizontal structure Others (Precast / Construction solution)	60% according to MS 1064 Part 10 100% according to MS 1064 Part 10 Less 50% according to MS 1064 Part 10 Less 80% according to MS 1064 Part 4 0% according to MS 1064 Part 5 100% -nil-

- (i) Calculate the IBS Score for Structure Element
- (ii) Calculate the IBS Score for Wall System
- (iii) Calculate the IBS Score for Other Simplified Construction Solution
- (iv) Total IBS Score

(20 marks)

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- END OF QUESTION -