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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAM
SEMESTER II
SESSION 2022/2023**

COURSE NAME : INDUSTRIALIZED BUILDING SYSTEM
COURSE CODE : BNC42503
PROGRAMME CODE : BNC
EXAMINATION DATE : JULY / AUGUST 2022
DURATION : 3 HOURS
INSTRUCTION : 1. ANSWER **ALL** QUESTIONS
2. THIS FINAL EXAM IS CONDUCTED
VIA **CLOSED BOOK**.
3. STUDENTS ARE **PROHIBITED** TO
CONSULT THEIR OWN MATERIAL
OR ANY EXTERNAL RESOURCES
DURING THE TEST CONDUCTED
VIA CLOSED BOOK

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

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- Q1** A precast concrete framed building is one of the most popular industrialized building systems preferred by architects and engineers
- (a) Based on **Figure Q1**, the Precast Skeletal frame system defines items 1 to 10. (10 marks)
 - (b) Determine **TWO (2)** categories of Precast beams. Explain and sketch for each of these categories. (10 marks)
 - (c) Provide an explanation for the following types of precast beams, irrespective of the building's function:
 - (i) Flat or wide rectangular precast concrete beam
 - (ii) T-beams and edge beams(5 marks)
- Q2** Precast concrete columns are the main vertical load-carrying members in precast structures.
- (a) Analyze the main design differences at the ultimate limit state of the precast column. (5 marks)
 - (b) Discuss and Sketch Square precast concrete columns with corbel structures. (10 marks)
 - (c) Explain why engineers prefer one or two-story heights for precast concrete columns, even though they can be fabricated up to four stories high (10 marks)
- Q3** Precast concrete load-bearing wall panels have structural, aesthetic, and functional features, Answer the following:
- (a) Describe in detail-what are the precast concrete load-bearing wall. (6 marks)
 - (b) Explain the categories of Precast Load Bearing Walls, specifically:
 - (i) Shear Wall
 - (ii) Lateral Force
 - (iii) Load Bearing Wall(9 marks)
 - (c) Based on the situation below, explain materials management at the construction site:
 - (i) If materials are purchased early
 - (ii) If materials are purchased late(10 marks)

Q4 During the construction of most types of buildings, precast concrete flooring and staircase offer a cost-efficient and adaptable solution for ground and suspended floors.

(a) Explain in detail the categories for the following items:

- (i) Precast concrete half slab
- (ii) Precast concrete hollow core slab
- (iii) Precast concrete prestressed plank

(12 marks)

(b) Stairs are a vital part of the evacuation of people during fires and/or accidents. Staircases should be designed to remain intact, and the connections should be detailed to maintain their stability, especially in cases of emergencies.

State **NINE (9)** advantages of the precast staircase.

(9 marks)

(c) Evaluate the situation of this staircase based on the given options:

- (i) Individually Unit
- (ii) Complete Unit

(4 marks)

- **END OF QUESTIONS** -

FINAL EXAMINATION

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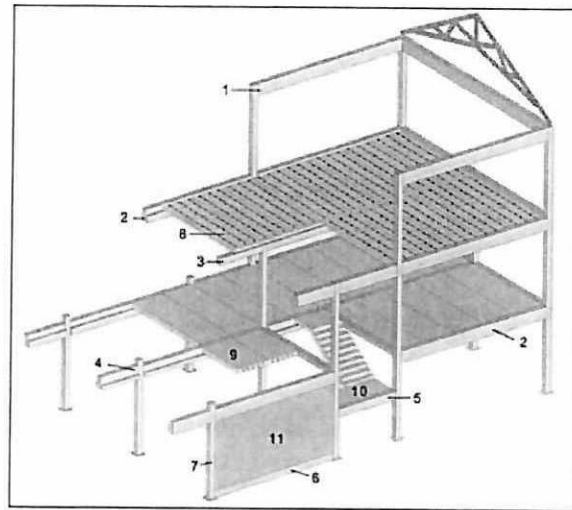


Figure Q1

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