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# UTHM

Universiti Tun Hussein Onn Malaysia

**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER I  
SESSION 2023/2024**

COURSE NAME : TALL BUILDING CONSTRUCTION

COURSE CODE : BFB 40203

PROGRAMME CODE : BFF

EXAMINATION DATE : JANUARY/FEBRUARY 2024

DURATION : 3 HOURS

INSTRUCTION

1. ANSWER ALL QUESTIONS
2. THIS FINAL EXAMINATION IS CONDUCTED VIA
  - Open book
  - Closed book
3. STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK

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

**TERBUKA**

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- Q1** (a) Explain **FIVE (5)** component of Hybrid Mass Damper (HDM) system that are applied in Canton Tower of China to address stability and vibration concerns due to typhoons and earthquake. (15 marks)
- (b) The construction of tall buildings is very challenging, especially in producing the architect's imagination in terms of aesthetic value. Critically explain the construction technique that applied in Marina Bay Sand Hotel of Singapore from ground level until link trusses at level 23 to overcome the complexities associated with the slanting tower structure. (10 marks)
- Q2** (a) Predict and explain **FIVE (5)** possible challenges in the construction of diaphragm wall. Provide suitable sketches to aid your explanation. (10 marks)
- (b) List **FIVE (5)** fire safety escape strategies to be considered in the early design stage of a tall building. (5 marks)
- (c) Predict and explain **FIVE (5)** possible challenges in the superstructure construction of tall buildings. Provide suitable sketches to aid your explanation. (10 marks)
- Q3** (a) The construction of sky parks that serve as a link between buildings has become a trend in the construction of tall buildings such as Marina Bay Hotel of Singapore Raffles City Chongqing of China. This structure requires analysis and construction planning to avoid any difficulties during construction and maintenance period. Based on your understanding, recommend the suitable construction method of sky park on top of tall building. Provide suitable sketches to aid your explanation. (15 marks)
- (b) The future of modern tall buildings are relatively higher, lighter and slenderer and often design in non-conventional architectural forms. In order to minimise wind-induced force, analyse the following structural concepts that applied in Canton Tower and Burj Al Arab.
- (i) foundation system (3 marks)
  - (ii) structure system (3 marks)
  - (iii) damper system (4 marks)

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- Q4**
- (a) Predict and explain **FIVE (5)** possible challenges in constructing a shear wall for a tall building in a desert area such as in Dubai.  
(10 marks)
  - (b) Predict and explain possible risks that are going to happen to a man-made island due to the seismic effects.  
(10 marks)
  - (c) Describe the revolution of vertical transportation systems in the construction of tall buildings.  
(5 marks)

– END OF QUESTIONS –

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