



**UNIVERSITI TUN HUSSEIN ONN  
MALAYSIA**

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

COURSE NAME	:	SUSTAINABLE CONSTRUCTION MANAGEMENT
COURSE CODE	:	BNC 31202
PROGRAMME CODE	:	BNC
EXAMINATION DATE	:	JULY/ AUGUST 2023
DURATION	:	2 HOURS
INSTRUCTION	:	1. ANSWER <b>ALL</b> QUESTIONS 2. THIS TEST EXAMINATION IS CONDUCTED VIA <b>CLOSED BOOK.</b> 3. STUDENTS ARE <b>PROHIBITED</b> TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

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**CONFIDENTIAL**

- Q1** (a) Principles of sustainable design are set of a strategy which leads to a more thorough understanding of the building's interaction with the environment. Explain the objective and strategies for the principles:
- (i) Economic sustainability (2 marks)
  - (ii) Human sustainability (2 marks)
- (b) State the purpose and measures of construction and waste demolition management. (3 marks)
- (c) Life-cycle of a building can be categorized into three phases as stated below. Identify the green strategies during the phases:
- (i) Pre-building (3 marks)
  - (ii) Building (3 marks)
  - (iii) Post building (3 marks)
- (d) The adverse impacts to the environment from the construction industry had led to a growing realization that there is a need for a more sustainable responsible approach to the current practices. This growing attention pushes the government and professional bodies in Malaysia to be more proactive in alleviating this problem without restraining the need for development. Explain in detail **ONE (1)** example that is currently implemented by the government to promote sustainability in the construction industry. (9 marks)

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**Q2** Megah Holding Sdn. Bhd. is required to implement of sustainable construction for future projects in Taman Harmoni Cahaya based on the Green Building Index (GBI) rating tool. As a civil engineering technologist at Megah Holding Sdn Bhd, you must prepare a brief report on the future project in Taman Harmoni Cahaya by answering the following questions:

(a) State **SIX (6)** GBI assessment criteria for buildings to be certified as environmentally friendly.

(3 marks)

(b) Even with a tight budget for government spending, many green building measures can be incorporated with minimal or zero increased up-front costs and they can yield enormous savings. Briefly explain **FIVE (5)** such measures.

(5 marks)

(c) Propose **TWO (2)** for each GBI assessment criteria that can be carried out to achieve points with aid illustration.

(12 marks)

(d) Green buildings or sustainable buildings aim to reduce operating costs over the life of the building. This is achieved by applying a project life cycle cost analysis approach. While some benefits of green buildings may be difficult to quantify, they can still have significant positive impacts on the environment, human health, and well-being. Briefly explain **FIVE (5)** benefits that are not easily quantified based on your answer in **Q1(c)**.

(5 marks)

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**Q3** Green Building Index (GBI), GreenRE (REHDA), and MyCREST (CIDB-JKR) are the rating tools which have been developed in Malaysia. These green building rating tools are used to assess and recognize buildings which meet that certain requirements or standards. The use of these rating tools, which is often voluntary, recognizes and rewards companies and organisations that develop and operate greener buildings, thereby encouraging and incentivizing them to push the boundaries of sustainability.

(a) Differentiate the rating tool between Green Building Index (GBI), GreenRE (REHDA), and MyCREST (CIDB-JKR).

(6 marks)

(b) Green Building Index (GBI) and Green Real Estate (GreenRE) are among the prominent green building rating tools for commercial and residential projects that have been developed and introduced over the past few years into the Malaysian construction industry. With references to the latest GBI Tools and GreenRE Tools for Residential Building, differentiate the strategies suggested in both rating tools to achieve the following objectives:

(i) Energy efficiency

(5 marks)

(ii) Indoor environment quality

(5 marks)

(c) In comparison to newly constructed buildings, existing buildings require higher capital costs to achieve higher performance and a better rating of green building certification. To what extent do you agree with this statement?

Provide and discuss your arguments.

(9 marks)

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- Q4** As a designer at EnergySaving Sdn. Bhd., you are requested by the company to design an effective rainwater harvesting at Universiti Tun Hussein Onn Malaysia (UTHM), Pagoh branch.
- (a) Define rainwater harvesting. (2 marks)
- (b) Explain **FIVE (5)** benefits gained when using rainwater harvesting. (5 marks)
- (c) Discuss **SIX (6)** basic components of a rainwater harvesting and conservation system. (6 marks)
- (d) Using diagram, suggest a rainwater harvesting system that could be used in the university. (12 marks)

– END OF QUESTIONS

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