



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

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

- COURSE NAME : SUSTAINABLE CONSTRUCTION
- COURSE CODE : BPD 35103
- PROGRAMME CODE : BPC
- EXAMINATION DATE : JULY 2024
- DURATION : 3 HOURS
- INSTRUCTIONS :
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 **FOUR (4)** PAGES

Q1 The importance of indoor environmental quality (IEQ) on occupants' conditions is well recognized, representing an essential factor that can affect health and well-being.

(a) Describe good practice of indoor environmental quality (IEQ) to the occupants (5 marks)

(b) Indoor air pollution has received little attention in the past compared with air pollution in the outdoor environment. It has now become a matter of increasing public concern, prompted partly by the emergence of new indoor air pollutants, by the isolation of the indoor environment from the natural outdoor environment in well-sealed office buildings, and by the investigation of so-called Sick Building Syndrome”.

(Sources: DEO 2024)

Outline **FIVE (5)** elements for achieving good quality performance in the building

(20 marks)

Q2 In the contemporary era, novel sustainable materials that address structural and environmental concerns have become increasingly prevalent in the construction sector. These materials are designed to meet high performance requirements while minimizing negative ecological consequences. Global warming and climate change are caused by the continual increase in CO2 emissions resulting from the growing construction process and usage of traditional building materials.

(a) Discuss **THREE (3)** key elements of sustainable construction materials and resources

(9 marks)

(b) **Figure Q2.1** shows the stage of result, reduction and reuse are the most effective ways you can save natural resources, protect the environment and save money.

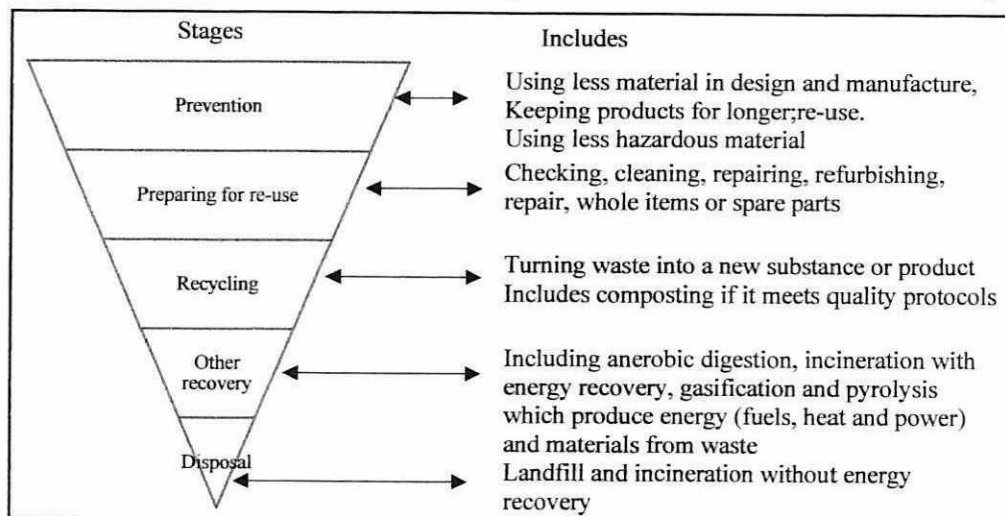


Figure Q2.1 Stages for reduction and reuse of materials in construction

Based on Figure Q2.1.b

- (i) Discuss **TWO (2)** challenges to achieve a good result for saving a natural resource, protecting the environment, and saving money.

(6 marks)

- (ii) Elaborate **TWO (2)** strategies to achieve a goal for the reduction and reuse of material in construction.

(10 marks)

Q3 Existing research and applications show that water supply and consumption are the primary factors affecting water stress worldwide, with numerous studies confirming adding water supply sources and increasing water efficiency to be the two main strategies for reducing water stress.

(Sources: Liu 2024)

- (a) Classified **FIVE (5)** element of water efficiency according to green building index (GBI) guideline.

(5 marks)

- (b) Rough estimated, the water supply for a centralised community settlement would need to have a capacity of 0.3 LT/sec per 1000 people when the water is mainly distributed by means of public standpipes and about 1.5 LT/sec per 1000 people or more when yard and house connections predominate.

- (i) Explain the benefits of the water efficiency idea that the community will be gained through aspect of social, economic and environment

(6 marks)

- (ii) Illustrate the water efficiency operation

(14 marks)

- Q4** A global opinion survey conducted by the World Business Council for Sustainable Development found that green buildings are thought to be 17% more expensive than conventional buildings. While recent studies show that green buildings cost 2% more than average.

(Sources: EDGE 2023)

- (a) Argue about the benefits of having a green building for a new construction project.

(5 marks)

- (b) Innovation is a part of green building index (GBI) assessment for GBI rating, therefore:

Illustrate **TWO (2)** innovations for energy efficiency that can be applied in the green office building.

(20 marks)

- END OF QUESTIONS -