Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2019/2020

COURSE NAME	:	SUSTAINABILITY IN ARCHITECTURE
COURSE CODE	:	BFR21103
PROGRAMME CODE	:	BFF
EXAMINATION DATE	:	DECEMBER 2019 / JANUARY 2020
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

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

Q1 (a) Define the following terms:

(i) Green roof
(ii) Climatic factors
(iii) Sustainable design
(iv) Green Building Index

(4 marks)

(b) Identify the needs of sustainable architecture from your own perspective.

(6 marks)

(c) As an architect for a project that to be built on slope near to coastal line, describe **THREE (3)** climatic factors that influence building design in the context of Malaysia climate. Provide sketches to support your answers.

(15 marks)

Q2 (a) Sustainable design is an enhanced building standard that promotes environment and human health. Therefore, careful considerations are given to the building materials.

(i) Differentiate the advantages and disadvantages between sustainable materials and non-sustainable materials.

(6 marks)

(ii) Illustrates how sustainable materials can be integrated in your design towards improving indoor air quality thus promoting human health.

(6 marks)

(b) Solar passive design strategies emphasis on sun orientation as a major design consideration. Explain with illustrations how external shading devices is used to reduce solar radiation and optimize daylighting in Malaysia context.

(13 marks)

Q3 (a) The skin of the building acts as a barrier between the indoor environment and the outdoor environment. The thermal performance of a building depends upon the facade design to a large extent, ranking second to the local climatic characteristics. Discuss the significance of the Overall Thermal Transfer Value (OTTV) controls as a means of enhancing energy efficiency in buildings.

(10 marks)

(b) Justify and discuss with sketches of buildings as example in the three important parameters on which OTTV depends on the architectural design parameters, the climatic parameters and the parameters pertaining to the local inhabitants.

(15 marks)

Q4 (a) The Green Building Index (GBI) is a green building rating system developed by the Malaysian Institute of Architects (PAM) and the Association of Consulting Engineers Malaysia (ACEM). GBI is a comprehensive rating system for evaluating the environment design and performance of buildings based on the following **SIX (6)** main criteria such as; Energy Efficiency (EE), Indoor Environmental Quality (IEQ), Sustainable site planning & Management (SM), Material and Resources (MR), Water Efficiency (WE) and Innovation (IN).

Discuss the impact of green building rating systems on the sustainability and efficacy of green buildings in the case analysis of Green Building Index (GBI) in Malaysia.

(10 marks)

(b) Propose **THREE (3)** recommendations for energy efficiency and use of renewable energy for non-residential building. Justify and provide illustration to support your proposal.

(15 marks)

– END OF QUESTIONS –