

AR317 - Ecologically Sustainable Development

Date: Friday 3rd June, 2022
Time: 12.50pm
Room: Studio 1
Duration: 3 hours

Instruction to Candidates:

- 1.0 You have 10 minutes to read the paper.
You must not begin writing during this time.
- 2.0 All answers must be written on the answer book(s) provided
- 3.0 Print your name and student identification number on the answer book(s) provided. Do it now.
- 4.0 No reference material is allowed in the examination room.
- 5.0 No mobile phones allowed.
- 6.0 Attempt All Questions

Question No.1 (3 marks)

Carbon emissions is one factor that is at the heart of the climate-change problem. Explain how the architecture profession can assist in addressing this problem.

Question No.2 (5 marks)

- (a) What is Ecologically Sustainable Development? (2 marks)
- (b) When sustainable development is discussed in general, it is normally discussed in reference to the triple bottom line (economic, social, and environment). Briefly discuss why this is normally the case (3 marks)

Question No.3 (6 marks)

- (a) Give the correct descriptions for the following acronyms given below (3 marks)
- (b) State the country responsible for creating the green rating scheme given below (3 marks):

- (i) LEED
- (ii) BREEAM
- (iii) CASBEE

Question No.4 (3 marks)

Explain the following concepts:

- (a) integrated building design
- (b) low embodied energy
- (c) life cycle assessment

Question No.5 (4 marks)

The building design and construction process can involve the following stages:

- (i) Pre-design
- (ii) Concept design
- (iii) Final design
- (iv) Construction management

Suggest strategies the architect can use in promoting ESD practices in each of the stages listed above.

Question No.6 (4 marks)

The following issues dominate discussions on ESD with reference to architecture. Explain why this is necessary.

- (a) Energy efficiency in building design
- (b) Waste management systems
- (c) The promotion of passive building design strategies
- (d) The need to minimise carbon footprint

Question No.7 (5 marks)

What are the differences between sustainable design and green design?

Question No.8 (5 marks)

Green architecture tries to address the following issues:

- Sustainable sites
- Water conservation
- Materials and resources
- Energy efficiency
- Indoor environmental quality

Briefly explain why these issues are important.

Question No.9 (3 marks)

What is the Circular Economy and how is it meant to assist in reducing waste?

Question No.10 (3 marks)

Most countries around the world have established their own *Green Building Councils*. Papua New Guinea has yet to establish its own Green Building Council.

Do you think this is necessary, if so, why?