



THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY  
DEPARTMENT OF CIVIL ENGINEERING – 2<sup>nd</sup> YEAR DEGREE

SECOND SEMESTER EXAMINATIONS - 2022

CE 421 – INTEGRATED BUILDING DESIGN

DATE: FRIDAY, 31<sup>ST</sup> OCTOBER 2022 – 12:50 P.M

VENUE: STRUCTURES LECTURE THEATRE (SLT)

TIME ALLOWED: 3 HOURS

INFORMATION FOR CANDIDATES

1. You have 10 minutes to read the paper before the examination starts. You must **not** begin writing during this time.
2. **There are SIX (5) Questions in this paper. Answer any 5 Questions.**
3. Use only ink. Do not use pencils for writing except for drawings and sketches.
4. Only Calculator is allowed in the examination room. MOBILE PHONE is not allowed (**Switch your Mobile Phones OFF**). Notes and textbooks are not allowed.
5. Start each question on a new page and show all your calculations in the answer book provided. No other material will be accepted.
6. **Write your NAME and Student NUMBER clearly on the front page.**  
**Do it now.**
7. **Marking Scheme:** All Questions carry equal marks.

**QUESTION 1 [10 marks] SLO1**

What is the difference between safety and serviceability? Can a structure be safe but fail due to serviceability? What are the different services which are considered in integrated building design over conventional building design?

**QUESTION 2 [10 marks] SLO2**

What is conceptual design? Write a short note on the factors to be considered in conceptual foundation design.

**QUESTION 3 [10 marks] SLO3**

Which design method you prefer between the integrated building design and conventional method of design and why? Critically discuss on the involvement of experts from different disciplines of science, engineering and technology in integrated building design.

**QUESTION 4 [10 marks] SLO 4**

Are Revit and BIM same? Distinguishing between BIM and Revit. Enumerate the applications of Building Information Modelling (BIM) to integrated design concepts.

**QUESTION 5 [10 marks] SLO 5**

What is meant by Energy efficiency and by the term energy performance of the buildings? Distinguish between the two. In your opinion, what is the role of climate change on the integrated building design?

**QUESTION 6 [10 marks] SLO 5**

Write short note on the followings:

- 1) Solstice and Equinox
- 2) The mode of solar energy utilization in integrated building design