

THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY  
FIRST SEMESTER EXAMINATIONS 2021

DEPARTMENT OF ARCHITECTURE AND CONSTRUCTION  
MANAGEMENT

AR 331 - BUILDING SYSTEMS IV

IN STUDIO 1

ON FRIDAY 4<sup>th</sup> JUNE 2021 AT 12.50pm

TIME ALLOWED: 3 HOURS

**DIRECTIONS TO CANDIDATES**

1. You have 10 minutes to read the examination paper. You must not begin writing during this time.
2. **Answer all questions. Answers must be short, brief and concise.**
3. Make sure that you read each question carefully. The number of marks for each question is shown near the question number.
4. Please PRINT your name and student number on the answer sheet provided. **Do it now.**
5. All answers must be written on the answer booklet provided. No other written materials are going to be accepted. Make sure that you hand in every answer sheet that you have used.
6. Calculators are permitted in the examination room. Notes and textbooks are not allowed.
7. Mobile phones are strictly not allowed inside exam room. All bags, hats and other personal items will be surrendered to the front of the room.

**Papua New Guinea University of Technology  
Department of Architecture & Construction Management**

**AR 331- Building Systems IV - Semester 1 Examination 2021**

**Answer all 10 Questions. Total Marks = 100.**

**Question 1: (10 Marks)**

Describe the following:

- a) Environment
- b) Built Environment

**Question 2: (10 Marks)**

Describe the following considerations:

- a) Environmental considerations
- b) Physical considerations

**Question 3: (10 Marks)**

Describe the following options for soil improvement and stabilisation:

- a) Remove and Replace.
- b) Surcharging

**Question 4: (10 Marks)**

Describe the following foundations:

- a) Shallow Foundations
- b) Deep Foundations

**Question 5: (10 Marks)**

Explain the difference between 'Stepped Footings' and 'Tie Beams' in foundations.

**Question 6: (10 Marks)**

Explain the difference between 'Caisson Foundations' and 'Pile Foundations'.

**Question 7: (10 Marks)**

Describe the types of loads on foundation.

**Question 8: (10 Marks)**

Describe any two (2) types of settlements of buildings.

**Question 9: (10 Marks)**

Describe any two (2) soil types in substructure.

**Question 10: (10 Marks)**

Draw a sketch of a service core with the following:

- 2 x lifts
- 2 x staircases
- 3 x male toilets
- 3 x female toilets
- 1 x mechanical
- 1 x electrical
- 1 x refuse
- 1 x janitor
- 1 x void
- 1 x plumbing

End of Paper