THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY

FIRST SEMESTER EXAMINATIONS 2024

SCHOOL OF ARCHITECTURE AND CONSTRUCTION MANAGEMENT

AR213 – BUILDING SYSTEMS I

IN ALT

On Tuesday 28th May 2024 AT 8.20am

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. **There are (two) 2 Parts to this examination paper. Part A consists of Question 1 to Question 6. Part B consists of Question 7 to Question 10.**
3. Answer all 10 questions. Total marks = 100.
4. Make sure that you read each question carefully. The number of marks for each question is shown near the question number.
5. Please PRINT your name and student number on the answer sheet provided. **Do it now on the two (2) books. Write Book 1 for Part A. Write Book 2 for Part B.**
6. All answers must be written on the answer booklet provided and no other written materials will be accepted.
7. You are allowed to answer questions in order of preference however clearly identify each answer with the right question number.
8. Hand in the completed answer sheet and the Question paper for collection and marking.
9. Calculators are permitted in the examination room but not the Notes and Textbooks.
10. Mobile phones are strictly not allowed.

PART A: QUESTION 1 TO QUESTION 6

Question 1 – Design Guidelines **12 Marks**

SPACE TYPES

- *There are many different types of spaces in a building and its type of space has its own characteristics and requirement.*
- *These functional spaces are exclusive, and must compliment its building type.*

What are the six (6) attributes a designer considers in Building Design Guide lines for the choice of space types.

Question 2 – Design Guidelines **16 Marks**

DESIGN OBJECTIVES

- *Each design objective is significantly important, yet it is one aspect of what it takes to achieve a successful project.*
- *A successful project is one where goals are identified early on and where the interdependencies of all the building systems are coordinated concurrently from the planning and programming phase*

Name and briefly describe these goals to achieve from the planning and programming phases.

Question 3 – Foundations of Buildings **3 Marks**

A building is broken up in 3 sections.

Name and describe these three (3) sections and where are these sections are located or found.

Question 4 Types of Foundations **7 Marks**

A) Name the two (2) types of foundations and 2 Marks

B) Briefly describe the functions of these two types of foundations. 5 Marks

Question 5 – Shallow Foundations **9 Marks**

Most shallow foundations are simple concrete Footings. Footings appear in many forms in different foundation systems.

There are three (3) types of substructures using simple wall footings.

A) Name and briefly describe these three (3) types of shallow substructure foundations. 3 Marks

B) Draw or sketch your understanding of these three (3) types of shallow substructure foundations. 6 Marks

Question 6 – Foundations **13 Marks**

Foundations on slopes has three scenarios.

A) Name and describe these three (3) scenarios. 7 Marks

B) Draw or sketch your understanding of these three (3) types of foundations on slopes foundations. 6 Marks

PART B: QUESTION 7 TO QUESTION 10

Question 7: **(10 Marks)**

(a) Draw a section view of the below ground water in the soil and label any two (2) types of the below ground water. (7)

(b) Explain any one (1) of the dewatering types. (3)

Question 8: **(10 Marks)**

(a) Describe the composition of the elements of a floor system. (4)

(b) Explain the depth of a floor system. (4)

(c) Explain any one (1) disadvantage of in-situ concrete. (2)

Question 9: **(8 Marks)**

(a) Describe the steel construction process in construction industry. (2)

(b) Describe any two (2) of the principles of fire precautions or protections in a typical building made of steel structure. (6)

Question 10: **(12 Marks)**

(a) Explain any five (5) main functions of suspended ceiling. (10)

(b) Explain how floor finish affect acoustic or sound of a room. (2)

END OF PAPER