

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF INDUSTRIAL TECHNOLOGY

DEPARTMENT OF CIVIL AND WATER

PART III AUGUST SUPPLEMENTARY EXAMINATIONS 2011

CONSTRUCTION TECHNOLOGY AND PROJECT MANAGEMENT-TCW3206

INSTRUCTIONS:

Total Marks 100

Answer any four questions

Time 3 hours

Diagrams should be neat and well labelled.

Question One

- (a) Identify and explain any three methods of subsoil investigation. (9 marks)
- (b) With the aid of clearly labeled diagrams illustrate the following foundation systems.
 - (i) Pad foundations (5marks)
 - (ii) Solid raft foundation (5marks)
 - (iii) Pile foundation (5marks)
 - (d) Define bearing capacity of soil (1mark)

Question Two

- (a) Explain two methods of Temporary exclusion of ground water (6marks)
- (b) Explain two methods of Permanent exclusion of ground water (6marks)
- c) Identify and briefly describe with aid of diagram one method of prestressing concrete. (8marks)
- d) Illustrate with clearly labeled diagram the connection of structural steel column and concrete base. (5marks)

Question Three

- (a) Explain how the following demolition methods are carried out.
 - (i) Pusher arm (4marks)
 - (ii) Deliberate collapse (4marks)
 - (iii) Wire rope (4marks)

- (b) Outline the necessary precautions to be observed before demolition takes place (4marks)

- (c) Illustrate diagrammatically the Traditional wall underpinning method. (9marks)

Question Four

- (a) The following are plant and equipment that are used in the Construction industry. Explain what are they and the purposes they serve.
 - (i) Graders (3marks)
 - (ii) Backactors (3marks)
 - (iii) Pumps (3marks)
 - (iv) Dumpers (3marks)
 - (v) Vibrators (3marks)

- (b) A construction project is represented by the data shown below.

Activity	Duration (weeks)	Preceding Activities
A	1	I
B	4	A,J
C	3	-
D	5	I
E	2	I
F	6	H
G	4	-
H	8	B, E
I	2	G
J	3	C,D

- i) Draw a network diagram to represent the inter-relationships between the activities indicated. **(6marks)**

- ii) Determine the critical activities and duration of the project. **(4 marks)**

Question Five

- a) Discuss the selective tendering method stating the pros and cons. **(8marks)**
- b) Outline the roles and responsibilities of the following construction professionals.
 - (i) Architect **(4marks)**
 - (ii) Structural engineer **(4marks)**
 - (iii) Quantity Surveyor **(4marks)**
- c) List any five procurement methods used in construction. **(5marks)**

END OF EXAMINATION