

**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF INDUSTRIAL TECHNOLOGY
DEPARTMENT OF CIVIL AND WATER
BACHELOR OF HONOURS DEGREE IN CIVIL AND WATER ENGINEERING
PART III SECOND SEMESTER EXAMINATIONS MAY 2011**

CONSTRUCTION TECHNOLOGY AND PROJECT MANAGEMENT-TCW3206

TIME: 3 Hours

TOTAL MARKS: 100

INSTRUCTIONS:

Answer any Four questions. 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