Name _____ Index No. _____/____

2707/203
CONSTRUCTION MANAGEMENT, WORKSHOP TECHNOLOGY AND WATER SUPPLY
Oct/Nov 2014
Time: 3 hours

Candidate's Signature _____

Date _____

THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN CIVIL ENGINEERING
MODULE II

CONSTRUCTION MANAGEMENT, WORKSHOP TECHNOLOGY AND WATER SUPPLY

3 hours

INSTRUCTIONS TO CANDIDATES

Write your name and index number in the spaces provided above.
Sign and write the date of the examination in the spaces provided above.
You should have mathematical tables/Calculator for this examination
*This paper consists of **EIGHT** questions in **THREE** sections; **A**, **B** and **C**.*
*Answer **FIVE** questions choosing **THREE** questions from Section **A**, **ONE** questions from section **B** and **ONE** question from section **C** in the spaces provided in this question paper.*
*All questions carry **20** marks.*
Maximum marks for each part of a question are as shown.
Candidates should answer the questions in English.

For Examiner's Use Only

Section	Question	Maximum Score	Candidate's Score
A	1	20	
	2	20	
	3	20	
	4	20	
B	5	20	
	6	20	
C	7	20	
	8	20	
		Total Score	

This paper consists of 16 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

Turn over

SECTION A: CONSTRUCTION MANAGEMENT

*Answer any **THREE** questions from this section in the spaces provided.*

1. (a) Explain **two** roles of the following parties to a contract:

   (i) client;
   (ii) architect. (6 marks)

   (b) Distinguish between "with bill of quantities contract" and "cost plus fixed fee contract" and give **one** merit and **one** demerit in each case. (8 marks)

   (c) Describe the following methods of communication used on construction site:

   (i) verbal communication;
   (ii) written communication. (6 marks)

2. (a) State **four** functions of management. (2 marks)

   (b) Define each of the following terms:

   (i) organization structure;
   (ii) strategy;
   (iii) policy;
   (iv) motivation. (6 marks)

   (c) Describe each oft he following tendering methods:

   (i) open tendering;
   (ii) selective tendering;
   (iii) design and build tendering. (9 marks)

   (d) Outline **three** organizational activities. (3 marks)

3. (a) (i) Outline **two** duties of a site manager.
   (ii) State **two** benefits of site management. (4 marks)

   (b) (i) Define the term "Site Layout Planning".
   (ii) Explain **four** common problems encountered on a construction site with reference to site layout. (12 marks)

   (c) Sketch and label an organization structure of middle sized construction firm. (4 marks)

4. (a) (i) List **four** sources of Law.
   (ii) State **four** essentials for any contract to be valid. (6 marks)

   (b) (i) State **three** requirements of an efficient filing system in an office.
   (ii) Describe **three** filing methods in an office. (9 marks)

(c) (i) Outline **two** roles of each of the following in a site meeting:

I Chairperson;
II Secretary.

(ii) State the purpose of an agenda in the meeting. (5 marks)

SECTION B: WORKSHOP TECHNOLOGY

*Answer any **ONE** questions from this section in the spaces provided.*

5. (a) State **three** advantages and **three** disadvantages of electrical power. (6 marks)

(b) Using a line diagram show the typical voltage values along the line from the generation station to the consumer. (6 marks)

(c) Draw a labelled circuit diagram to show the sequence of connection of control equipment at the intake of a domestic installation. (8 marks)

6. (a) State:

(i) **two** advantages of connecting electrical loads in parallel in an installation.
(ii) **four** safety rules to be observed with regard to the use of electrical energy. (6 marks)

(b) Explain **three** precautions to be observed when carrying out electrical installation in a bathroom. (6 marks)

(c) (i) State **six** reasons for engaging an electrician on a construction site.
(ii) List **four** electrical equipment used at a construction site. (8 marks)

SECTION C: WATER SUPPLY

*Answer any **ONE** question from this section.*

7. (a) Describe each of the following methods in water treatment:

(i) sedimentation;
(ii) filtration. (6 marks)

(b) (i) State **four** comparisons between centrifugal and reciprocating pump.
(ii) Sketch and label a reciprocating pump. (7 marks)

(c) An orifice in one side of a large tank is rectangular in shape, 2 metres broad and 1 metre deep. The water level on one side of the orifice is 4 metres above its top edge. The water level on one side of the orifice is 0.5 m below its top edge.
Sketch the arrangement and calculate the discharge through the orifice in m^3/s if $c_d = 0.63$. (7 marks)

8. (a) Water flows through a pipe 200 mm in diameter, 60 m long, with a velocity of 2.5m/s. Determine the head loss due to friction using:

(i) darcy's formula;
(ii) chezy's formula.

Assume f = 0.005 and C = 55 (5 marks)

(b) A trapezoidal channel with side slope of 2 vertical to 3 horizontal discharges water at the rate of $20m^3/s$. If the bed slope is 1 in 2000, design an economical section. Taking Mannings N = 0.01. (10 marks)

(c) A horizontal verturimeter conveying oil of specific gravity of 0.9 has an inlet diameter of 150 mm and a throat diameter of 100 mm.
Determine the discharge in m^3/s if deflection in a mercury differential manometer is 200 mm.
Take $C_d = 0.98$. (5 marks)