CAMEROON GENERAL CERTIFICATE OF EDUCATION BOARD

Probatoire Technique Examination

JUNE 2016 **Date: Wednesday 25-05-2016**

Series/ Specialties	**Civil Engineering (Building Construction Option) (F4BA)**
Subject Title	**Construction Processes**
Subject Code No.	**F4BA-6037**
Type of Exam	**WRITTEN**
Weighting (Coef.)	**SEE INSIDE**

Duration: 14:00 - 17:00

General Instructions

You are reminded of the necessity for good English and orderly presentation of your material.
Where calculations are involved show your working, giving your answer at each stage.

Content: QUESTIONS

Specific Instructions

REPUBLIC OF CAMEROON

PEACE – WORK – FATHERLAND

MINESEC/GCE BOARD

TECHNICAL PROBATOIRE
SESSION: 201...
SERIES: F4-BASIC CIVIL ENGINEERING
DURATION : 3 HOURS
COEFFICIENT :2
WRITTEN PAPER

CONSTRUCTION PROCESSES

- No documents are allowed except those given to the candidates by the examiners
- Candidates can use non programmable scientific calculators
- Before you start work, make sure that you have from sheet 1/3 to sheet 3/3

USE SKECTCHES TO SUPPORT YOUR ANSWERS WHERE NECESSARY

CONSTRUCTION OF A BUILDING G+5

DESCRIPTION : During a call to tender, by your community, for the construction of a building **G+5,** a local firm was selected for the execution of the project. The bearing soil on the construction site is not very resistant and it is heterogeneous. The layout of the area is well planned as stipulated by town planning regulations. You are a qualified civil engineering technician and you are recruited for this project.

PART ONE: TRANSFORMATION OF THE SITE AND TOWN PLANNING (7MKS)

A/ Town planning (3.5MKS)

1/ Define the following terms:

Layout plan; Housing estate (subdivision). ---------- 0.5x2=1mk

2/ According to town planning regulations, answer the following questions:

a) State three roles of town planning. ---------- 0.25x3=0.75mk

b) State the role of zoning and give one advantage. ---------- 0.5+0.25=0.75mk

3/ Differentiate between block plan and location plan. 0.25x3+0.25=1mk

B/ Earthworks and Setting out (3.5MKS)

1) State the role of setting out. ---------- **0.5mk**
2) Name two major tools or appliance used for setting out. ---------- **0.5mk**
3) Give two roles of profile boards during setting out ---------- **0.25x2=0.5mk**

4) Name two different types of earth works necessary for this project. 0.5x2=1mk
5) Indicate the type of foundation which could be realised for each of the earthworks above. ----------0.5x2=1mk

PART TWO: REALISATION OF FOUNDATIONS (7MKS)

Due the nature of the loads applied and the dimensions of the site, this project could be realized on two types of foundations, namely deep foundations and special foundations.

1/ a) Give two reasons to justify the use of raft foundations. ----------1mk

b) Name three types of rafts that you know. ---------- 1mk

c) Draw a diagram to show the functioning principle of a raft. ---------- 1mk

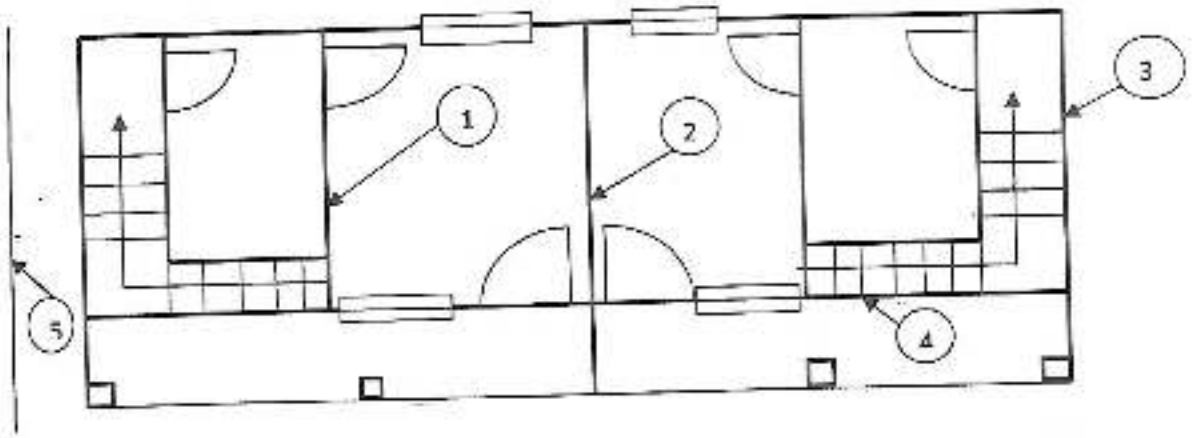
2/ Good foundation soil is not accessible at certain portions, and you are obliged to use piles or wells.

a) Differentiate between wells and piles.---------- 2mk
b) During the driving of piles, two resistances could be encountered, name them: -- ----------0.5x2=1mk
c) Calculate the increase in bearing capacity of a well of diameter **1.75m** given that the increase in diameter of the well is **2.25m** and that the admissible bearing capacity of the soil σ is 2 **daN /cm²**. ---------- 1mk

PART THREE: REALISATION OF STRUCTURAL ELEMENTS (6MKS)

A/Construction of walls (3.75MKS)

1) State two essential roles of a wall. ---------- 0.25X2=0.5mk
2) You are given the diagram below:



Name the parts on the diagram above. ---------- 0.25X5=1.25mk

After the realisation of the bearing structure of this building, the next step is infilling or panelling.

a) Define: Infilling---------- 0.25mk
b) Name three types of infilling that you know--------- 0.25X3=0.75mk

c) Differentiate between a panel wall and a curtain wall. **1mk**

B/ Drainage (2.25MKS)

1) State two purposes of soil drainage. ---------- **1mk**
2) Draw a labelled sketch of drainage behind an external foundation wall. **1.25mks**