



CAMEROON GENERAL CERTIFICATE OF EDUCATION BOARD

Technical and Vocational Education Examination

JUNE XXXX

ADVANCED LEVEL

Specialty Name (Specialty Code)	PLUMBING HYDRAULICS AND SANITARY INSTALLATION
Subject Title	PLUMBING PROJECT MANAGEMENT
Paper No.	2
Subject Code No.	7213

Time allowed: Three hours (03Hrs)

INSTRUCTIONS TO CANDIDATES

- 1. You are reminded of the necessity for good English and orderly presentation in your answers.*
- 2. You are advised to read carefully through the question paper, before you begin your answers.*
- 3. The question paper has three (03) sections, all the sections are compulsory.*
- 4. You are requested to answer all the sections and all the sections carry equal marks.*
- 5. This question paper is scored on 75 marks*
- 6. Leave all answers to two decimal places.*

1. SITE INSTALLATION

- a) In support of risks and the consequences of industrial accidents and professional diseases in the work milieu, show how a company may become bankrupt if it does not implement a rigorous health and safety policy. **(7 Marks)**
- b) The protective gloves have characteristics which are linked to mechanical risks represented by numbers; **2, 1, 4, 3**. Interpret the meaning of these numbers. **(6 Marks)**
- c) Explain each of the following method of signalization; luminous signals and acoustic (sound) signals. **(6 Marks)**
- d) Justify and identify the use of the following safety signs indicated in; a, b and c. **(6 Marks)**

**(25 marks)****2. WORK ORGANIZATION**

- a) Explain why in the installation of a site the following plumbing fixture ratios are not equal: 1 WC pour 20 workers, 1 lavatory for 10 workers and 1 shower for 8 workers. **(6 Marks)**
- b) The site in which you work in has a means of handling and transportation a crane. State the safety measures you are to give a worker who is called upon to receive heavy loads in relationship to future handling of loads. Justify the importance of these safety precautions. **(5 Marks)**
- c) Explain how a perfect site installation will impact the performance of an enterprise. **(7 Marks)**
- d) Elaborate a site installation plan in its preparatory phase, in the following four orders: 1 – site visit and analysis of the environment. 2 - Analyses of the tender documents 3 – Contact of the administrative services and neighbours 4 – Establish a draft plan. Appreciate these steps. **(7 Marks)**

(25 marks)**3. SITE PLANNING**

The activities given in the table1, is the plan of the execution of a hydraulic project.

Activities	Previous Tasks	Duration (Days)	Workers	General labors
A	/	1	1	2
B	/	1	1	2
C	A	1	1	3
D	B	2	3	2
E	C	2	2	3
F	C	3	2	3
G	E	2	1	1
H	FG	1	1	1
I	D	3	1	2
J	I	2	1	2
K	HJ	1	1	2

- a) Draw the PERT planning (9 Marks)
 b) Deduct the critical path. (3 Marks)
 c) Elaborate the associated GANTT planning (8 Marks)
 d) Draw the manpower curve. (5 Marks)

(25 marks)

4. QUANTITIES AND ESTIMATES

In view of the construction of an apartment residential building, the quantities of the plumbing lot are given in the table 2:

N°	Designation (material supply only)	Unité	Quantité	Prix unitaire	Temps unitaire de l'équipe	Nombre des ouvriers par équipe
1	Supply and installation of the distribution network.	m	150	1 500	0.25h	2
2	Supply and installation of plumbing fixtures	u	20	55 000	1h	2
3	Supply and installation of the drainage network	m	90	1 400	0.25h	2
4	Supply and installation of shower accessories	u	35	5 500	1h	2
5	Earthworks and chiselling	m	500	125	1h	2

Consider the following:

- Duration of a working day : 8h ;
- General expenses = 15% SPWT
- Special charges (expenses)=1% SPWT
- Site expenditure = 40% Dry cost
- TVA= 19.25% SPWT
- Base hourly wage of a worker is 900 FCFA ;
- Charges on salaries : 10% base hourly wage ;
- Average bonuses and allowances (210 F)

Work require

- 1) Calculate the average base hourly wages of a worker (3 Marks)
- 2) Calculate the dry cost (DC) (9 Marks)
- 3) Determine the total cost (TC). (5 Marks)
- 4) Calculate the selling price without taxes (SPWT). (5 Marks)
- 5) Calculate the selling price with all taxes included. (SPWAT) (3 Marks)

(25 marks)