

**Building Construction 3**  
**7010**

**CAMEROON GENERAL CERTIFICATE OF EDUCATION BOARD**

General Certificate of Education Examination

**JUNE 2015**

**ADVANCED LEVEL**

Subject Title	<b>Building Construction</b>
Paper No.	<b>3 (Site Management, Professional Legislation)</b>
Subject Code No.	<b>7010</b>

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**Three Hours**

Answer **THREE** questions in Section A and **TWO** in Section B.

EACH question carries 20 marks.

You will be provided with 2 A4 graph papers.

*You are reminded of the necessity for good English and orderly presentation of your answers.*

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## SECTION A

## SITE MANAGEMENT

Answer Any Three Questions from this Section

1. (a) Define the following:
- (i) Output. (1 mark)
- (ii) Unit time. (1 mark)
- (b) Five workers have to realize  $15\text{m}^3$  of concrete in 8 hours.

**Calculate:**

- (i) The output of the gang. (2 marks)
- (ii) The unit time of realization. (2 marks)
- (c) You are the chief of a reinforcement post. You have to realize 32 columns. The characteristics of a column can be seen below:
- Longitudinal reinforcement 6HA12.
  - Transversal reinforcement  $\varnothing 6$  (six of them, each having a length of 50cm).
  - Height of column = 2.40m.
  - Unit time for fabrication = 10mins/kg.
  - Daily working time = 6hours.

**Question**

- (i) Calculate the stock to preview for each category of reinforcement knowing that a metre length of reinforcement is 12m. (7 marks)
- (ii) Determine the time to complete all the reinforcement in hours. (4 marks)

NB: Waste for reinforcement is estimated at 10%. It is necessary to foresee an additional 40cm of reinforcement (main) as waiting rods. See characteristics of reinforcement below.

Diameter	5	6	8	10	12	14	16
Weight/m	0.154	0.222	0.394	0.617	0.888	1.208	1.578

- (iii) Determine the number of workers necessary if the contract delay is one day. (3 marks)

2. (a) To carry out the earth works of a swimming pool, different equipment are used.
- (i) Name three of these equipment. (3 marks)
- (ii) Give their functions. (4 marks)
- (b) State five activities required before opening (starting) a site? (5 marks)
- (c) State the role of a scaffold in building and give three criteria which condition the choice of a scaffold. (8 marks)

3. On a Construction site work starts from 8.00 am to 1.00pm and from 2.00pm to 6.00pm each day. Concrete is provided and cast according to the table that follows:

S/N	Structure	Quantity	Period
1	Foundation	$140\text{m}^2$	8.00am to 11.00am
2	Shafts	$25\text{m}^2$	11.00am to 12.00noon
3	Pillars	$22\text{m}^2$	12.00noon to 1.00pm
4	Walls	$31\text{m}^2$	3.00pm to 4.00pm
5	Slabs	$111\text{m}^2$	2.00pm to 5.30pm

The composition of concrete per  $\text{m}^3$  is as follows:

- Cement: 350kg.
- Sand 400l.
- gravel 800l.

The stocking area of the site can contain a maximum of  $90\text{m}^3$  of aggregates. The delivery of cement to the site is done by trucks having a capacity of 25 tons and a cycle of 120 minutes each.

- Calculate the radius of the stocking area if its height is 4.00m. (The volume of a cone is given by  $\frac{\pi r^2 h}{3}$ . Consider that sand and gravel are mixed and stocked together)
- If the stock of cement at the start of the day is 110 tons. Draw on a graph paper the diagram of the evolution of stock for the day.
- How many trucks of  $12\text{m}^3$  capacity are needed to replenish the concrete post at the end of the day if the stock at the start of the day is  $100\text{m}^3$  of aggregates. Consider waste due to transportation and handling to be 3%.

4. Figure 1 below represents the dependency list of activities, their duration and number of workers per activity of a given project.

Preceding Activities	Activities	Duration (days)	No of workers
-	A	2	2
-	B	5	3
A, B	C	3	3
B	D	7	2
C	E	6	4
D, E	F	3	2
D, E	G	8	5
D	H	3	2
H	I	4	4
G, H	J	2	3
F	K	6	4
J, K	L	8	3
K	M	5	5

- Draw the PERT network and determine the total duration of the project. Clearly show the critical path. **(8 marks)**
- Transform the above PERT network into Gantt chart. **(6 marks)**
- Draw the manpower graph of the project. **(6 marks)**

**SECTION B: PROFESSIONAL LEGISLATION***Answer Two Questions in this Section*

5. (i) Out line and explain three features of ownership as prescribed by law. (6 marks)
- (ii) What qualifies a land in Cameroon to be considered as "public land"? (6 marks)
- (c) State four advantages and four disadvantages of the sole proprietor. (8 marks)
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6. (i) State four features of a private limited company. (8 marks)
- (ii) Define a business unit. (4 marks)
- (iii) List and explain the classification of traders in Cameroon. (8 marks)
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7. All construction works, be it building or public works, require periodical controls:
- (i) What is the aim of this control? (3 marks)
- (ii) What are the means made available for the enterprise to do this control? (5 marks)
- (iii) Give three different ways of tendering for a building contract. (6 marks)
- (iv) Explain what you understand by:
- (a) Contract on control expenses. (3 marks)
- (b) Control contract. (3 marks)
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