2306/306
CONSTRUCTION MANAGEMENT
Oct./Nov. 2017
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL.

DIPLOMA IN QUANTITY SURVEYING

CONSTRUCTION MANAGEMENT

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:
Answer booklet;
Scientific calculator.
This paper consists of EIGHT questions.
Answer FIVE questions in the answer booklet provided.
All questions carry equal marks.
Maximum marks for each part of a question are indicated.
Candidates should answer the questions in English.

This paper consists of 5 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

1. (a) Explain **two** factors to consider when selecting a contractor. (4 marks)

   (b) State **four** roles of trade unions to construction employees. (4 marks)

   (c) Explain **three** stages involved in disciplining an errant employee. (12 marks)

2. (a) Outline **four** resources required for an effective construction firm. (6 marks)

   (b) Plain concrete (1:3:6) is to be cast in a foundation trench whose volume has been given in the bill of quantities as 8 m³. Using the data in **table 1**, compute:

   (i) number of bags of cement;
   (ii) weight of sand in tonnes;
   (iii) weight of ballast in tonnes.

   (9 marks)

   Table 1

Density of cement	1440 kg/m³
A bag of cement	50 kg
Density of sand	1600 kg/m³
Density of ballast	1500 kg/m³
Yield of concrete	$\frac{1}{4}$ m³
Bulking of sand	20%

   Make any reasonable assumption.

   (c) State **five** advantages of a network analysis. (5 marks)

3. (a) Outline **four** incentives provided by organizations to their employees. (6 marks)

   (b) Highlight **six** precautions observed when using portable ladders. (6 marks)

   (c) Explain **four** documents used in material procurement in construction firms. (8 marks)

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4. (a) **Table 2** shows the activities and duration for constructing a bungalow. Use the data to:

    (i)   draw an arrow network diagram;
    (ii)   show the maximum duration of the project;
    (iii) indicate the critical path;
    (iv) determine the earliest and latest start, finish times and floats using the analysis table.

                    (14 marks)

Table 2

ACTIVITY	PREDECESSOR	DURATION IN WEEKS
A	-	4
B	-	3
C	-	5
D	A	2
E	C	5
F	B, D, E	6
G	A	4
H	C	3

(b) Explain each of the following terms as used in method study:

    (i)   normalising;
    (ii)   rating;
    (iii) timing.

                    (6 marks)

5. (a) State **four** roles of each of the following stakeholders in construction industry:

    (i)   Architectural Association of Kenya;
    (ii)   Ministry of Labour.

                    (8 marks)

(b) Highlight **four** reasons for site meetings for construction projects.   (4 marks)

(c) Explain **four** training methods used in imparting skills to employees.   (8 marks)

6. (a) State **five** reasons for providing boarding on construction sites. (5 marks)

   (b) Highlight **two** functions of signboards on construction sites. (3 marks)

   (c) Outline **four** classification of buildings in Kenya and state **two** examples for each. (12 marks)

7. (a) Explain **four** books of accounts used in construction firms. (8 marks)

   (b) Explain **three** methods of depreciating a machinery. (6 marks)

   (c) Explain **three** filing systems for an office. (6 marks)

8. (a) The work of a plumber loading pipes was timed and rated as shown in **table 3** with its allowance in **table 4**. Calculate the standard time using cumulative technique for:

   (i) each element;
   (ii) the activity.
   (16 marks)

Table 3

No.	Element	Rating	W.R.
	Check time	-	0.00
1.	Collect pipe	80	0.35
2.	Walk to lorry	90	0.49
3.	Load pipe	90	1.00
	Smoke	-	1.21
4.	Back to lorry	100	1.30
	Talk	-	2.45
1.	Collect pipe	110	3.56
2.	Walk to lorry	80	4.63
3.	Load pipe	80	5.04
4.	Back to lorry	90	5.68
	Check time	-	6.00
	Stop watch		6.78

Table 4

Element		Body position	Process	Contingency
1	3	4	3	4
2	2	2	1	4
3	1	6	2	4
4	2	3	5	4

(b)   State **four** roles of a quantity surveyor before a commencement of a project.

(4 marks)

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