

1704/105
SITE MANAGEMENT AND
CONSTRUCTION PLANT
June/July 2023
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL
CRAFT CERTIFICATE IN BUILDING CONSTRUCTION

MODULE I

SITE MANAGEMENT AND CONSTRUCTION PLANT

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Drawing instruments;

Scientific calculator.

This paper consists of EIGHT questions in TWO sections; A and B.

Answer FIVE questions choosing TWO questions from Section A, TWO questions from Section B and ONE question from either section.

All questions carry equal marks.

Maximum marks for each part of a question are as indicated.

Candidates should answer the questions in English.

This paper consists of 4 printed pages.

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

SECTION A: SITE MANAGEMENT

Answer at least TWO questions from this section.

1. (a) State **four** roles of sub-contractors in the construction industry. (4 marks)
- (b) Explain **four** factors considered in a workshop layout. (8 marks)
- (c) Explain **four** sources of finance for acquisition of construction plant. (8 marks)
2. (a) Explain **three** reasons for holding stores. (6 marks)
- (b) Distinguish 'actual measurement' from 'nominal measurement'. (4 marks)
- (c) Explain **five** cost elements in material estimation. (10 marks)
3. (a) Explain **three** remedies to breach of contract. (6 marks)
- (b) Differentiate between each of the following terms used in procurement:
 - (i) specification and requisition;
 - (ii) contract and tender. (8 marks)
- (c) Explain **three** documents used in store keeping. (6 marks)
4. (a) Explain the term 'work measurement' as used in office procedures. (2 marks)
- (b) Explain **four** functions of preliminary items in construction sites. (8 marks)
- (c) (i) Explain the term 'site organization'.
- (ii) Explain **four** considerations for storage materials on a construction site. (10 marks)

SECTION B: CONSTRUCTION PLANT

Answer at least TWO questions from this section.

5. (a) List **four** types of construction equipment. (2 marks)
- (b) Explain **four** reasons for using construction equipment. (8 marks)
- (c) An excavator and trucks are to be used on a construction project. Using the data provided, determine:
- (i) anticipated output per hour for the excavator.
 - (ii) the net output per hour.
 - (iii) number of days it will take to perform the task.
 - (iv) number of trucks required.

DATA

- Volume of soil to be excavated	- 3600 m ³
- Excavator bucket capacity	- 1.2 m ³
- Efficiency factor of excavator	- 0.80
- Operator's efficiency	- 0.90
- Cycle time for the excavator	- 6 minutes
- Truck cycle time	- 40 minutes
- Truck loading time	- 15 minutes
- Working hours per day	- 8 hours
- Swell of soil	- 25%

(10 marks)

6. (a) Explain **five** activities carried out in plant maintenance. (10 marks)
- (b) Outline **two** factors that affect compactive effort of a compacting plant. (3 marks)
- (c) With the aid of a labelled sketch, explain the operation of a backactor. (7 marks)
7. (a) Outline **two** requirements in plant management. (3 marks)
- (b) Explain **three** benefits of plant management. (6 marks)
- (c) With the aid of a labelled sketch, explain the operation of a 'truck concrete mixer'. (7 marks)
- (d) Explain **two** operations of compacting plant. (4 marks)

8. (a) (i) State **four** advantages of using conveyor belts. (9 marks)
- (ii) Sketch and label a conveyor belt arrangement. (4 marks)
- (b) Explain **two** types of bitumen laying plant. (4 marks)
- (c) A floor slab size 15 m by 12 m with a thickness of 150 mm is to be concreted. Using the data provided, determine the number of days required to concrete the floor.

DATA

Mixer drum capacity	-	0.2 m ³
Loading time	-	3 minutes
Discharge time	-	1 minute
Mixing time	-	2 minutes
Mixer inefficiency	-	15%
Shrinkage and waste	-	25%
Hours worked per day	-	8 hours

(7 marks)

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