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1704/105  
SITE MANAGEMENT AND  
CONSTRUCTION PLANT  
June/July 2016  
Time: 3 hours



**THE KENYA NATIONAL EXAMINATIONS COUNCIL**  
**CERTIFICATE IN BUILDING TECHNOLOGY**  
**MODULE I**

**SITE MANAGEMENT AND CONSTRUCTION PLANT**

**3 hours**

**INSTRUCTIONS TO CANDIDATES**

*You should have the following for this examination:*

*Answer booklet;*

*Mathematical tables/Scientific calculator.*

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

*Answer any FIVE questions; choosing at least TWO questions from Section A, TWO questions from Section B and ONE question from either section in the answer booklet provided.*

*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 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.**

**SECTION A: SITE MANAGEMENT**

*Answer at least TWO questions from this section.*

- ✓ (a) (i) State any **two** services that are required on a construction site.
- (ii) Outline the functions of the following regulatory bodies:
- (I) National Environment Management Authority (NEMA);  
 (II) National Construction Authority (NCA). (2 mark)
- (b) With the aid of a sketch describe a typical site layout showing the following in relation to the proposed building:
- Site board;
  - Gate keeper's office;
  - Mess room;
  - Site office;
  - Toilets;
  - Materials area/storage.
- (8 marks)
- (c) (i) Explain **two** roles of each of the following parties in a construction project contract:
- Client;
  - Quantity surveyor.
- (4 marks)
- (ii) Explain the following types of tendering:
- Open tendering;
  - Selective tendering.
- (4 marks)
- (ii) Differentiate between the following types of contracts:
- Labour only;
  - Lump sum.
- (2 marks)
2. (a) (i) Explain the meaning of the following purchasing terms:
- Quotations;
  - Invoice;
  - Payment certificate.



- (ii) State any **two** types of stores.
- (iii) Sketch a typical delivery note showing the significant features. (15 marks)
- (b) Outline the precautions taken when storing each of the following materials on site:
- Cement in bags;
  - Reinforcements;
  - Timber;
  - Sand;
  - Drainage goods.
- (5 marks)
3. (a) State **four** methods of filing used in a construction site office. (4 marks)
- (b) (i) Explain the following techniques of preparing a bill of quantity (B/Q):
- Taking off;
  - Squaring;
  - Abstracting;
  - Billing.
- (ii) Calculate the number of bricks and quantity of mortar required to construct a wall half brick thick, 3 m high and 5 m long with a door opening of 1.1 m x 2.4 m. (16 marks)
4. (a) (i) State any **four** personal safety wear in a workshop.
- (ii) Sketch the layout of a carpentry workshop to show the following:
- Changing room;
  - Tool stores;
  - Offices;
  - Material store;
  - Positions of radial arm saw, surface planer, circular saw, thicknesser and band saw.
- (12 marks)
- (b) Outline any **four** sources of capital finance for the purchase of equipment and machinery. (4 marks)
- (c) Differentiate between the following types of inventory:
- Permanent inventory;
  - Consumable inventory.
- (4 marks)



## SECTION B: CONSTRUCTION PLANT

Answer at least TWO questions from this section.

3. (a) State **four** classifications of construction plant. (4 marks)
- (b) Determine the output of a construction plant considering the following:
- Container holding capacity - 1 m<sup>3</sup>
  - Maximum cycles per hour - 25
  - Operator efficiency factor - 0.8
  - Machine efficiency factor - 75%
- (6 marks)
- (c) (i) State any **two** reasons for having a pump on a construction site.
- (ii) With the aid of sketches explain how the following equipment work:
- Boring auger;
  - Drop hammer.
- (10 marks)
6. (a) (i) Explain the operations of a scraper.
- (ii) List **six** factors that influence the output of a scraper. (9 marks)
- (b) (i) List **two** types of construction plant that compact by:
- Rolling;
  - Vibration.
- (ii) Outline any **three** factors affecting compaction. (8 marks)
- (c) Explain **three** reasons for plant management in a construction site. (3 marks)
7. (a) Explain the operation of a central concrete mixing plant. (6 marks)
- (b) Sketch and label a reversing drum mixer. (11 marks)
- (c) Distinguish between a pan mixer and a tilting drum mixer. (3 marks)

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1. Breakdown of the machine  
2. Wear and Tear  
3.



8. (a) (i) List any **three** types of bitumen laying plant.  
(ii) With the aid of a sketch explain the operation of any of the bitumen laying plant mentioned in 8 (a) (i) above.  
(10 marks)
- (b) Explain the following operations of a low loader transporting plant truck:  
- loading;  
- hauling;  
- discharging.  
(6 marks)
- (c) Describe the following types of plant maintenance:  
- corrective maintenance;  
- planned maintenance.  
(4 marks)

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