

2707/203  
CONSTRUCTION MANAGEMENT II,  
WORKSHOP TECHNOLOGY II AND  
WATER SUPPLY  
Oct./Nov. 2017  
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN CIVIL ENGINEERING

MODULE II

CONSTRUCTION MANAGEMENT II,  
WORKSHOP TECHNOLOGY II AND WATER SUPPLY

3 hours

**INSTRUCTIONS TO CANDIDATES**

*You should have the following for this examination:*

*Answer booklet;*

*Mathematical tables/scientific calculator.*

*The paper consists of EIGHT questions in THREE sections; A, B and C.*

*Answer any FIVE questions choosing THREE questions from section A, ONE question from section B and ONE question from section C in the answer booklet.*

*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: CONSTRUCTION MANAGEMENT I

Answer **THREE** questions from this section.

1. (a) State **two** roles of the listed stakeholders in the construction industry:
- (i) The Kenya Bureau of Standards (KEBS);
  - (ii) The Architectural Association of Kenya (AAK);
  - (iii) County authorities;
  - (iv) Ministry of housing.
- (8 marks)
- (b) Describe the following types of contractors in the construction firm:
- (i) medium contractors;
  - (ii) speculative builders;
  - (iii) sub contractors.
- (12 marks)
2. (a) Differentiate between management and organisation. (4 marks)
- (b) Explain **five** functions of management. (10 marks)
- (c) With the aid of a diagram, explain the stated types of organisation relationship.
- (i) lateral relationship;
  - (ii) direct relationship.
- (6 marks)
3. (a) State **two** duties of the given parties involved in the building industry.
- (i) Client.
  - (ii) Architect.
  - (iii) Clerk of works.
- (6 marks)
- (b) Outline the procedure of open tendering method for a proposed project. (6 marks)
- (c) State **two**:
- (i) advantages of open tendering method;
  - (ii) disadvantages of open tendering.
- (4 marks)



- (d) Explain where the following areas can be positioned on site layout plan:
- (i) administrative office;
  - (ii) concrete mixer.
- (4 marks)
4. (a) State **four** factors to consider for a contract to be valid. (4 marks)
- (b) Describe the listed types of contract documents:
- (i) drawings;
  - (ii) bill of quantities;
  - (iii) specifications.
- (12 marks)
- (c) As a site manager for a proposed project, where construction is about to commence, explain the procedure of writing site instructions. (4 marks)

### SECTION B: WORKSHOP TECHNOLOGY II

*Answer ONE question from this section.*

5. (a) Define the following terms as used in earthing:
- (i) earth;
  - (ii) solidly earthed.
- (4 marks)
- (b) Explain **two** main reasons for earthing. (4 marks)
- (c) With the aid of sketches;
- (i) describe the operation of a current operated earth leakage breaker.
  - (ii) explain how to measure the earth resistance area of an earth electrode.
- (12 marks)
6. (a) State **two**:
- (i) advantages of a grid system;
  - (ii) authorities involved in the power production.
- (4 marks)



- (b) With the aid of sketches, explain:
- how a hydro-electric power station operates.
  - the power distribution systems of an A.C two phase three phase wire.
- (16 marks)

### SECTION C: WATER SUPPLY

*Answer ONE question from this section.*

7. (a) State **two** assumptions for flow of liquid. (2 marks)
- (b) Gasoline of specific gravity 0.8 is flowing upward through a vertical pipe tapers from 30 cm to 15 cm diameter. A mercury differential manometer is connected between 30 cm and 15 cm pipe section to measure the rate of flow. The distance between the manometer tappings is 1 m and gauge reading is 50 cm of mercury.
- Determine:
- the differential gauge reading in terms of gasoline head.
  - the rate of flow.
- Neglect friction and other losses. (8 marks)
- (c) (i) State **two** differences between a notch and a weir. (2 marks)
- (ii) A rectangular channel has a cross-section of  $50 \text{ cm}^2$ . Determine the discharge through the most economical section, if the bed is 1 in 1000. Take Chezy's constant,  $C = 52.5$ . (8 marks)
8. (a) (i) State **two** factors to be considered in selecting pumps. (2 marks)
- (ii) With the aid of a sketch, describe the working principles of a reciprocating pump. (8 marks)
- (b) (i) Distinguish between precipitation and evaporation. (4 marks)
- (ii) With the aid of a sketch, explain the hydrological cycle. (6 marks)

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