

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:
- administrative office;
 - 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:
- drawings;
 - bill of quantities;
 - 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:
- earth;
 - solidly earthed.
- (4 marks)
- (b) Explain **two** main reasons for earthing. (4 marks)
- (c) With the aid of sketches;
- describe the operation of a current operated earth leakage breaker.
 - explain how to measure the earth resistance area of an earth electrode.
- (12 marks)
6. (a) State **two**:
- advantages of a grid system;
 - 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 cm². 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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