

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 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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