

2707/203
CONSTRUCTION MANAGEMENT I,
WORKSHOP TECHNOLOGY II AND
WATER SUPPLY
Oct./Nov. 2018
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

**DIPLOMA IN CIVIL ENGINEERING
MODULE II**

CONSTRUCTION MANAGEMENT I, WORKSHOP TECHNOLOGY II AND WATER SUPPLY

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

answer booklet;

scientific calculator.

This paper consists of EIGHT questions in THREE sections A, B and C.

Answer FIVE questions, choosing THREE questions from section A, ONE question from section B and ONE question from section C.

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: CONSTRUCTION MANAGEMENT I

Answer **THREE** questions from this section.

1. (a) Explain **three** roles of the following parties to a contract:
- (i) client;
 - (ii) quantity surveyor;
 - (iii) contractor.
- (9 marks)
- (b) Explain the following functions of management:
- (i) planning; *Bring together ideas on how a construction project will be conducted*
 - (ii) organizing; *organizing*
 - (iii) controlling; *monitoring & managing*
 - (iv) co-ordinating.
- (8 marks)
- (c) State **three** reasons that make planning an important function of an organization.
- (3 marks)
2. (a) Define the following terms as used in management:
- (i) organization structure;
 - (ii) strategy;
 - (iii) policy;
 - (iv) motivation.
- (4 marks)
- (b) (i) Explain the concept of "span of control" in an organization.
- (ii) State **four** factors which influence the span of control.
- (12 marks)
- (c) Outline **four** distinct functions a contract documentation plays in the construction process.
- (4 marks)
3. (a) (i) Outline **three** filing methods used in offices.
- (ii) State **five** general principles of filing.
- (8 marks)

- (b) (i) Explain the benefits of site layout planning.
- (ii) Explain the importance of the following site layout planning elements:
 - (I) safety;
 - (II) site accessibility;
 - (III) security.

(12 marks)

4. (a) Explain the following in relation to construction contract:

- (i) defects liability period;
- (ii) preliminaries;
- (iii) interim certificate;
- (iv) bill of quantities;
- (v) retention fund.



(10 marks)

(b) Describe each of the following tendering methods:

- (i) open tendering;
- (ii) selective tendering;
- (iii) package deal.

(6 marks)

(c) State **four** roles of local authorities in building works.

(4 marks)

SECTION B: WORKSHOP TECHNOLOGY II

Answer **ONE** question from this section.

5. (a) State **five** components of a safe and efficient electrical circuit. (5 marks)

(b) With the aid of a diagram, outline the function of each of the components of a consumer control unit. (12 marks)

(c) State the instruments used to measure the following:

- (i) electric current; *ammeter*
- (ii) potential difference; *multimeter*
- (iii) resistance.

(3 marks)

6. (a) State the **five** classifications of electrical accessories giving **one** example of each. (5 marks)
- (b) Outline **three** factors that affect the current rating of cables. (3 marks)
- (c) Sketch a diagram of a P.V.C insulated and sheathed twin with earth flat cable and state the function of each part. (6 marks)
- (d) With the aid of a sketch describe the looping - in method of wiring a lighting final sub-circuit in a conduit wiring system. (6 marks)

SECTION C: WATER SUPPLY

Answer **ONE** question from this section.

7. (a) Define each of the following: (3 marks)
- atmospheric pressure;
 - gauge pressure;
 - absolute pressure.
- (b) With the aid of a sketch, explain the Thiessen polygon method of determining areal rainfall. (6 marks)
- (c) Determine the discharge through a partially submerged large rectangular orifice shown in figure 1. (Take $C_d = 0.63$) (6 marks)

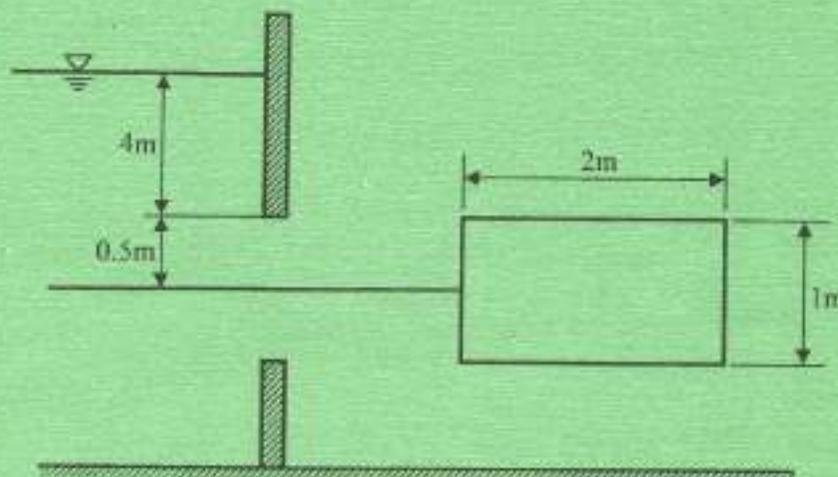


Fig. 1

- (d) An isosceles triangle of base 3 metres, and altitude 6 metres, is immersed vertically in water, with its axis of symmetry horizontal as shown in the figure 2. If head of water above its axis is 9 metres, determine the total pressure on the plate and the centre of pressure acting on the plate. (5 marks)

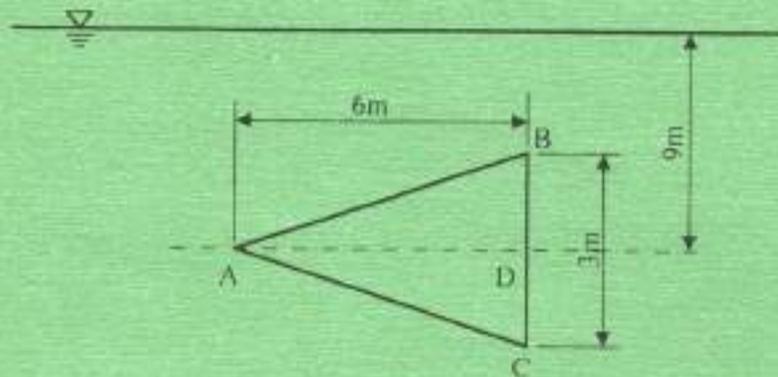


Fig. 2

8. (a) With the aid of sketches, describe bar screens water treatment. (7 marks)
- (b) Outline **four** factors considered in selecting a water intake site. (4 marks)
- (c) Explain the importance of coagulation flocculation processes in water treatment. (5 marks)
- (d) Compare reciprocating and centrifugal pumps in respect to the following characteristics;
- speed;
 - head;
 - size;
 - cost.



(4 marks)

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