



Machakos University College

(A Constituent College of Kenyatta University)

University Examinations 2013/2014

SCHOOL OF ENGINEERING

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

Diploma in Civil Engineering

Module II

Construction Management I

Water Supply I

Workshop Technology II (Electrical)

Date: 25/3/2014

Time: 8:30 – 11:30 am

Instructions to Candidates

- (i) You should have the following for this Examination
 - Answer Booklet
 - Scientific Calculator
- (ii) Attempt five questions. Three from section A, One question from Section B and one question from Sections C.
- (iii) Maximum marks for each part of question is shown.

1.
 - (a) Explain the nature of construction industry. (3 marks)
 - (b) State five types of contractors. (3 marks)
 - (c) Explain the following bodies associated with Building and Civil Engineering.
 - (i) Architects Association of Kenya
 - (ii) Local Authorities
 - (iii) Board of Registration of Architects and Quantity Surveyors
 - (iv) Engineers Registration of Kenya. (12 marks)
2.
 - (a) Define the firm Management. (2 marks)
 - (b) Explain five function of management. (10 marks)

- (c) Describe four principles of management. (8 marks)
3. (a) Outline the weaknesses of formal organization. (3 marks)
- (b) Explain six roles of informal organization. (12 marks)
- (c) State five functions to consider when purchasing new equipments. (5 marks)
4. (a) State eight steps of planning (4 marks)
- (b) Outline five merits of formal Organization structure. (5 marks)
- (c) Describe the following types of formal organization structure. (9 marks)
- (i) Line organization
- (ii) Line and staff organization
- (iii) Matrix organization
- (d) Define the term organization (2 marks)

SECTION B: WATER SUPPLY

Answer at least One Question from this section

5. (a) Define the following terms.
- (i) Total pressure
- (ii) Centre of pressure (2 marks)
- (b) Prove that the intensity of pressure at a point in a liquid at rest is the same in all directions (8 marks)
- (c) For the U-tube manometer shown below. Calculate the gauge and absolute pressure if the manometric fluid is mercury and the flowing fluid is glycerine of relative density = 0.91.
- Barometric pressure head on site = 720 mmHg (10 marks)
6. (a) Illustrate the following pressure measuring devices and briefly explain how each functions.
- (i) Bourdon gauge
- (ii) Piezometer (6 marks)

Type equation here.

- (b) Proof that the centre of pressure for a vertically immersed irregular plane surface is given by:

$$h = \frac{I_G}{Ax} + x$$

(7 marks)

- (c) For the tapered pipeline shown, calculate the difference in pressure between points A and B given the following parameters:

Density of fluid = 920 kg/m^3

Manometric fluid is mercury, $\rho = 13.6 \times 10^3 \text{ kg/m}^3$

(7 marks)

SECTION C WORKSHOP TECHNOLOGY (ELECTRICAL)

Answer at least One Question from this Section

7. (a) Outline five factors that determine the choice of wiring systems. (5 marks)
- (b) Name 6 methods of wiring systems (that use sketch) as a mechanical protection. (6 marks)
- (c) List four types of metalized circuits used in the wiring systems. (4 marks)
- (d) Name five forms of trunking in wiring systems. (5 marks)
8. (a) Outline 8 types of cables available in the market for wiring systems. (8 marks)
- (b) By use of diagrams, illustrate 3 types of switches use in electrical installation. (6 marks)

In the diagram above

- (i) Determine the voltage across register R_3 if the total resistance of the circuit is $100 R$
- (ii) Determine the current flowing through register R_1
- (iii) Find the voltage of the register R_2 (6 marks)