MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)
University Examinations for 2015/2016

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

FIRST SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL ENGINEERING

BCE CD 109: ENGINEERING DRAWING I

Date: 3/12/2015 **Time: 2:00 – 4:00 pm**

INSTRUCTIONS:

- **This paper comprises of FIVE questions**
- **Question ONE is compulsory and carries 30 marks**
- **Answer any other TWO questions**

1. (a) Print the following paragraph in lower case letters.

"All lettering is done with the aid of penciled guide lines. Even experienced draughtsmen carefully draw horizontal guide lines because it is nearly impossible to maintain straight lines without them. Untill you have developed skill in vertical strokes , use vertical guide lines also. Afterwards, you may eliminate vertical strokes , but never eliminate the horizontal lines. (10 marks)

(b) (i) Construct the following angles using a pair of compass; 75^0, 45^0, 22.5^0

105, 120. (5 marks)

(ii) The pattern in FIG 1 is made up of interacing equilateral triangles. Draw the figure full size to the given measurements. (8 marks)

(c) The bottom half of an octagonal pattern is shown in FIG2. Make the drawing and indicate the depth D and width W. (7 marks)

2. (a) Copy FIG 3 full size , then construct a circle to touch the three sides.

(11 marks)

(b) FIG4 shows a comb joint marked on a piece of paper. Copy the figure full size using a geometrical method to mark out the equal spaces. (9 marks)

3. (a) An irregular pentagon is shown in FIG5. Copy the figure full size and convert it into a square of equivalent area. (15 marks)

(b) Draw a line 93mm and divide it into three parts in the ratio 2:5:7.

(5 marks)

4. (a) In FIG6, A and 0 are fixed points andAB and BC are two links which are pivoted at B. The point D is attatched to a crank pin which moves on the pitch circle as indicated. Draw the locus of C for one complete revolution of the crank pin. (15 marks)

(b) Draw the following types of lines; border line , break line, leader line, centre line, hidden detail line. (5 marks)

5. (a) Draw the following angles using the set squres, 75^0, 15^0, 120^0, 105^0,135^0.

(5 marks)

(b) One side of a a regular heptagon is given as 42mm. Construct the heptagon using the universal method. (10 marks)

(c) Construct a kite ABCD given the diagonals AC=50, and BD=90. The diagonals intersect at a point 65mm (5 marks)

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SECOND SEMESTER EXAMINATION FOR CERTIFICATE IN BUILDING CONSTRUCTION TECHNOLOGY

BCE BT 210: GENERAL BUILDING CONSTRUCTION II

Date: 8/12/2015 **Time: 8:30 – 10:30 AM**

INSTRUCTION:

- **This paper comprises of FIVE questions**
- **Question ONE is compulsory and carries 30 marks**
- **Answer any other TWO questions**

1. (a) (i) Briefly describe the application and connection procedure for water supply. (7 marks)

   (ii) Illustrate with a neat sketch the goose neck connection. (5 marks)

   (iii) State six desirable qualities for heat insulating materials. (6 marks)

   (b) (i) Explain the following terms; Back siphonage, Secondary circuit, Dead Leg. (6 marks)

   (ii) With the aid of a neat labeled sketch, show the details of a filled soakaway pit. (6 marks)

2. (a) Briefly describe the three systems of under ground drainage. (9 marks)

(b) Draw neat sketches of the following drainage fittings,

(i) Trapped yard gulley

(ii) Trapless yard gulley. (6 marks)

(c) Define the following terms as used in fire places;

(i) Constructional hearth,

(ii) super imposed hearth,

(iii) sorround,

(iv) fire place ,

(v) fire back. (5 marks)

3. (a) Differenciate between the terms plastering and rendering. (2 marks)

(b) (i) Explain the following terms as used in building maitainance;

Inspection, repair, maintainance. (6 marks)

(ii) Sketch and label a vertical section through a fire place showing the construction details. (12 marks)

4. (a) With the aid of a neatly labeled sketch , illustrate a direct cold water system for a one storey building. (12 marks)

(b) (i) Sketch and label a vertical section through manhole. (6 marks)

(ii) Differentiate between the terms water foul and soil water as used in drainage systems. (2 marks)

5. (a) (i) Sketch and label an indirect system of hot water. (9 marks)

(ii) State two advantages and two disadvantages of indirect system of cold water over the direct system. (4 marks)

(b) (i) Explain the effects of heat on solids. (2 marks)

(ii) State FIVE principles of fire places design. (5 marks)