



**THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE**

**((A Constituent College of JKUAT)**

(A Centre of Excellence)

# **Faculty of Engineering & Technology**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

**DIPLOMA IN CIVIL ENGINEERING**

EBC 2217: CIVIL ENGINEERING DRAWING & CAD

**END OF SEMESTER EXAMINATION**

**SERIES: AUGUST 2012**

**TIME: 2 HOURS**

**Instructions to Candidates:**

You should have the following for this examination

- A Personal Computer or a Laptop Computer installed with AutoCAD
- Create a folder in the desktop and name it after your class i.e. **DC 11**; save **ALL** your answers in this folder. Name your 'word' files and AutoCAD files using your **Student Registration Number**.

This paper consists of **FIVE** questions. Answer any **THREE** questions  
 Maximum marks for each part of a question are as shown  
 This paper consists of **THREE** printed pages

**Question One (20 Marks)**

- a) Explain the **THREE** methods of entering distances in CAD.
- b) Explain the principles of using layers in CAD.
- c) Explain **THREE** methods of restricting the movement of the cross-hairs (cursor) in CAD. (20 marks)

**Question Two (20 marks)**

- a) (i) The centre line of a proposed road is to be marked using four pegs; A, B, C, and D. The distances and bearings of AB, BC and CD are as given in the table below.

**Table I**

LEG	BEARINGS			DISTANCES IN METRES
	0	"	"	
AB	5	48	10	160.000
BC	115	1	59	199.150
CD	39	15	45	170.750

Legs AB and BC and CD are to be blended using curves of radii 41m and 46m respectively. Using CAD, draw the centre line of the proposed road.

- (ii) Draw the road reserve with a proposed width of 40m. (13 marks)

- b) The following information relates to a 200mm thick boundary wall.
  - 750mm wide x 250mm deep plain concrete strip foundation.
  - 300 x 75mm P.C.C. coping stone.
  - Height of wall = 2700mm from average ground level
  - Depth of foundation = 750mm
  - Use any other useful detail/information

Draw a section through the wall using CAD. (7 marks)

**Question Three (20 marks)**

- a) A bus-stand is required for a proposed bus terminus. The stand should provide cover against falling rain and the effects of direct sunlight to users when seated in the stand, boarding or alighting a bus. Design the stand and draw the cross-section showing the following. (20 marks)

- Type of foundation
- Framing method

- Roof details.

#### Question Four (20 marks)

A staircase is required for a proposed multi-storey office Block. Using the following information, draw a section through the staircase showing the first two flights and landings.

- Finished floor level to finished floor level height = 3300mm
- Riser = 150mm
- Width of flight = 1200mm

(20 marks)

#### Question Five (20 marks)

a) The following information relates to a timber pitched roof for a proposed residential house:

- Wall plate = 100 x 50mm
- Tie beam = 150 x 50mm
- Rafter = 150 x 50mm
- Struts/ties = 100 x 50mm
- Purlins = 50 x 50mm
- Roof covering = G.C.I sheets  
 $\phi$
- Rain water Gutter = 100mm (P.C.V)
- Fascia board = 12.5mm thick T & G boarding
- Roof Pitch = 25°

Using CAD, draw a section through the eaves to show the construction details of a closed eave.  
(20 marks)