



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

((A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

**HIGHER DIPLOMA IN BUILDING & CIVIL ENGINEERING
(HDBC 11)**

EBC 3219: COMPUTER AIDED DESIGN II

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: OCTOBER 2012

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination:

A Desktop Computer or a Laptop Computer installed with the following Software

- *A word Processor*
- *AutoCAD*

Create a folder in the desktop and name it HDIP 2BC. Save ALL your answers in word and AutoCAD in this folder. Name your word and AutoCAD files. Using full names followed by your student number.

This paper consists of FIVE questions.

Answer question **ONE (COMPULSORY)** and any other **TWO** questions

Maximum marks for each part of a question are as shown

This paper consists of **FOUR** printed pages

Question One (Compulsory - 30 marks)

- a) Discuss the advantages of computer aided design (CAD) over other methods used in drafting and design. **(20 marks)**
- b) Briefly explain how to convert an AutoCAD drawing created in inches into millimeters. **(5 marks)**
- c) State **THREE** methods of accessing commands in CAD windows. **(5 marks)**

Question Two (20 marks)

- a) Two bed roomed housing are required in a company staff housing scheme. Design and draw a suitable FLOOR PLAN satisfying the following requirements.

- 1) SITTING ROOM; Minimum floor area = 17.86m²
- 2) BEDROOMS: Minimum floor area = 9.30m²
- 3) CORRIDORS/LOBBIES: At least 1.05m wide.
- 4) VERANDA. At front door at least 1.8m wide.

NB. Least bedroom dimension = 3m

Least sitting room dimension 3.66m

- 5) Load bearing walls = 200mm thick
- 6) Non load bearing partition walls = 150mm thick
- 7) W.c. and bathroom (separate)

(20 marks)

Question Three (20 marks)

Figure 4 shows the cross-section of a typical reinforced concrete retaining wall. Reproduce the drawing as shown. **(20 marks)**

Question Four (20 marks)

- a) Using a computer aided design plot the boundary of a plot of land with the following information.

| | BEARINGS | | | DISTANCES IN METRES |
|---------|----------|----|----|---------------------|
| LE G | o | ' | '' | |
| AB | 37 | 36 | 44 | 12.000 |
| BC | 100 | 24 | 39 | 15.200 |
| CD | 125 | 17 | 40 | 17.300 |
| DE | 238 | 39 | 57 | 19.100 |
| EF | 180 | 00 | 00 | 25.000 |
| FG | 256 | 16 | 36 | 35.500 |
| GH | 294 | 21 | 39 | 44.400 |
| HJ | 37 | 03 | 34 | 35.434 |

| | | | | |
|----|----|----|----|--------|
| JA | 90 | 21 | 39 | 33.500 |
|----|----|----|----|--------|

- b) Briefly describe the following classes of pictorial drawings.
- i) Axonometric drawings
 - ii) Oblique drawings **(5 marks)**
- c) Describe the difference between isometric drawings and Dimetric drawings. **(5 marks)**

Question Five (20 marks)

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

| LEG | BEARING | | | DISTANCE IN METRES |
|-----|---------|----|----|--------------------|
| | o | ' | “ | |
| AB | 04 | 55 | 10 | 130.000 |
| BC | 105 | 32 | 45 | 167.000 |
| CD | 44 | 17 | 40 | 143.000 |

Legs AB and BC and BC and CD are to be blended using curves using curves 39m and 44m respectively. Using AutoCAD draw the required centerline of the road **(15 marks)**

- b) Draw the road reserve with a proposed width of 42m. **(5 marks)**