THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A constituent College of JKUAT)

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND AUTOMOTIVE ENGINEERING

DIPLOMA IN MECHANICAL ENGINEERING (PLANT)
DIPLOMA IN AUTOMOTIVE ENGINEERING
DIPLOMA IN MECHANICAL ENGINEERING (PRODUCTION)
DIPLOMA IN CHEMICAL ENGINEERING

EME 2208: ENGINEERING DRAWING IV

YEAR II SEMESTER II

SPECIAL/SUPPLEMENTARY EXAMINATION
MAY 2012 SERIES
TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES:

You should have the following for this examination:

- Answer booklet
- Drawing instruments
- Drawing Paper A2
- Scientific Calculator

This paper consists of **FIVE** questions

Attempt question ONE is compulsory and any other TWO questions. Maximum marks for each part of a question are as shown.

This paper consists of 3 printed Pages

Question ONE

Figure I below shows the parts of a mechanical component Assemble the parts and draw in first angle projection the following:

a) A sectional front elevation on the cutting plane A-A
b) The end elevation
c) The plan
d) Insert atleast eight dimensions
e) Tabulate a parts list *(30marks)*

Question TWO

Figure 2 Shows a link mechanism with crack 04 = 26mm rotating about centre O connected to link AB = 100 mm. End B slides horizontally link CD = 85mm is connected to link AB at C and passes / slides through point E throughout its movement. Trace the loans of point D when crack OA makes one complete revolution. *(20marks)*

Question THREE

a) i. What is the difference between plain bearings and rolling bearings.
   ii. With aid of a sketch name the parts of a flanged bush bearing (7marks)
b) Draw and label the parts of the following type of bearings
   i. Needle roller bearings
   ii. Double row self aligning ball bearings
   iii. Thrust ball bearing
   iv. Radial ball bearing

   Show the loading for each of the bearing in (b) (10marks)
c) State atleast SIX materials that can be used to manufacture bearings. (3marks)

Question FOUR

A disc can is required to impart the following motion to an offset roller pull over.

- Rise 30mm in 90˚ with uniform velocity (u.v)
- Dwell 45˚
- Rise 30mm in 60˚ with simple Harmonic Motion (sh.m)
- Dwell 45˚
- Fall 60mm in 120˚ with uniform Acceleration (U.A)

  Given that the roller follower is 20mm diameter and amount of offset is 15mm, minimum radius of cam is 30mm, rotation of cam is anti-clockwise. Construct.

  a) Displacement diagram
  b) Cam profile *(20marks)*

Question FIVE

a) State TWO main applications of screw threads. *(2marks)*
b) With the aid of sketches show the main features of screw threads. *(6marks)*
c) Define the following terms as applied in screw threads both internal and external.
   i) Pitch diameter
   ii) Lead
   iii) Pitch
   (3marks)
d) Sketch and label the following thread terms
   i) Acme
   ii) Buttress
   iii) ISO metric screw thread *(9marks)*