



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MEDICAL ENGINEERING

**UNIVERSITY EXAMINATION FOR:**

**BSC IN MEDICAL ENGINEERING**

**EME 4154: ENGINEERING DRAWING II**

**END OF SEMESTER EXAMINATION**

**SERIES: APRIL 2016**

**TIME: 2 HOURS**

**DATE: 17 May 2016**

## **Instructions to Candidates**

You should have the following for this examination

*-Answer Booklet, examination pass and student ID*

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

**Do not write on the question paper.**

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## **Question ONE**

Fig 1 shows an engineering component. Draw to show the component using the **FIRST** angle orthographic projection on a scale of 1:1 to include:-

- i. Front sectional view on plane X-X
- ii. End elevation on plane E
- iii. Plan elevation on plane P
- iv. Full dimensions

(30 Marks)

## **Question TWO**

Fig 2 shows a truncated hexagonal based pyramid, whose plan view is incomplete.

- i. Construct to show the views on 1<sup>st</sup> angle orthographic projection
- ii. Complete the plan view

- iii. Include an end view as seen in arrow direction E
- iv. Construct to show the auxiliary view of the top part

(20 Marks)

### Question THREE

Two open ended cylinders are shown in Fig 3.

- i. Construct to show the two cylinders
- ii. Include a plan view of the cylinders
- iii. Construct to show the interpenetration curve of the two cylinders

(20 Marks)

### Question FOUR

Construct to show the link mechanism set-up shown in Fig 4. Crank OA is pin-jointed and rotates about O while point B is constrained to move along path X-X. If Crank OA = 30mm and link AB = 100mm, construct to show the locus of mid-point P of link AB for one rotation of crank OA

(20 Marks)

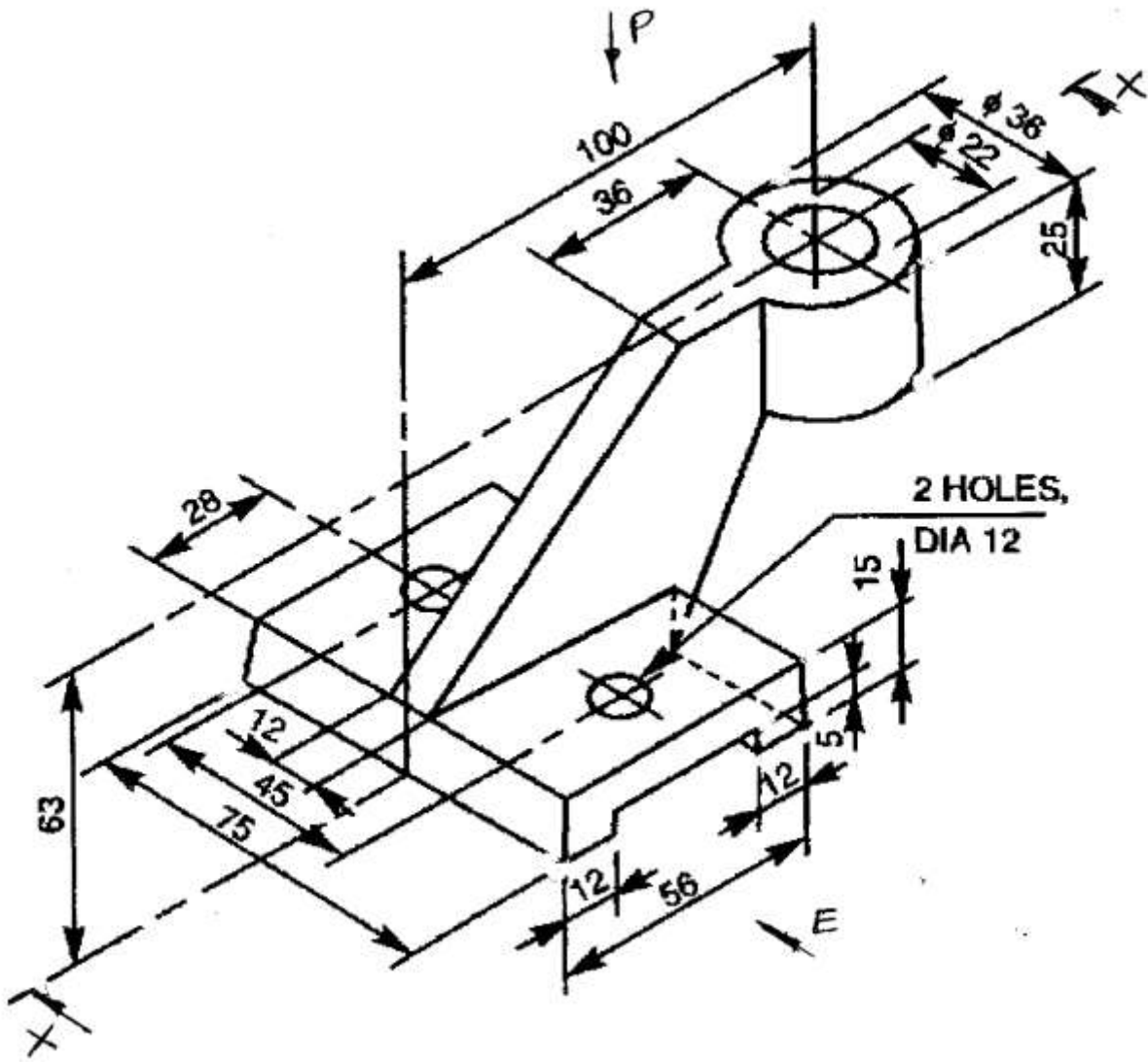
### Question FIVE

A disc cam of minimum diameter 30mm uses a knife edge follower to impart the following motions

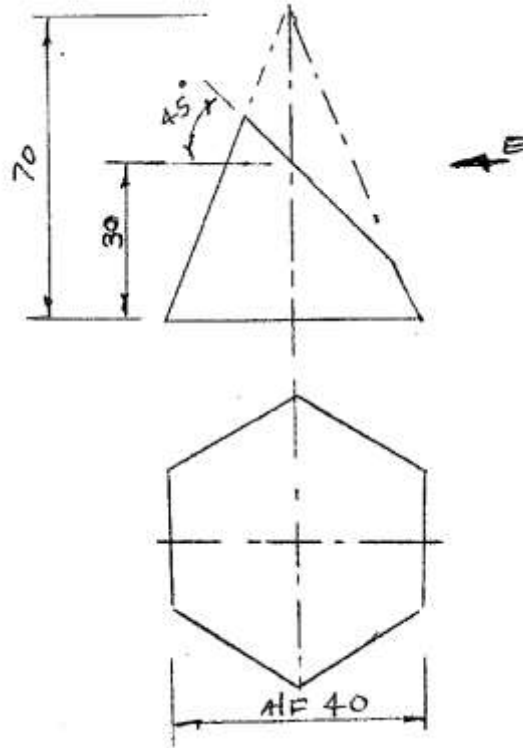
- 30mm rise with UV                       $0^\circ - 180^\circ$
- Dwell     $180^\circ - 270^\circ$
- Fall with SHM                               $270^\circ - 360^\circ$

i) Construct to show the displacement graph for these motions.

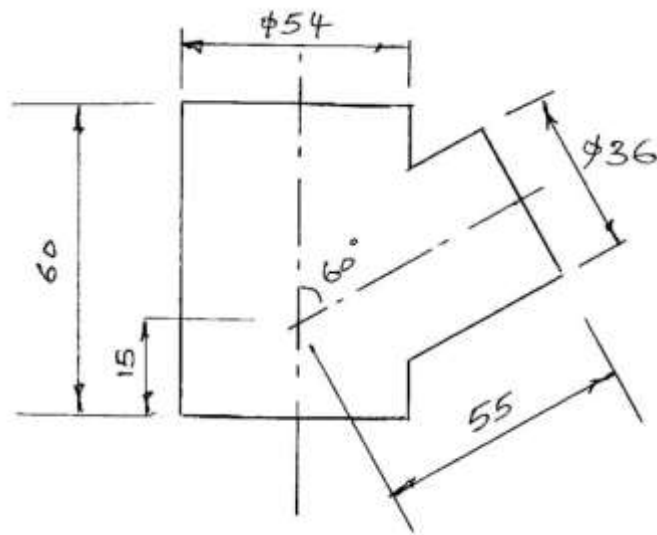
(20 Marks)



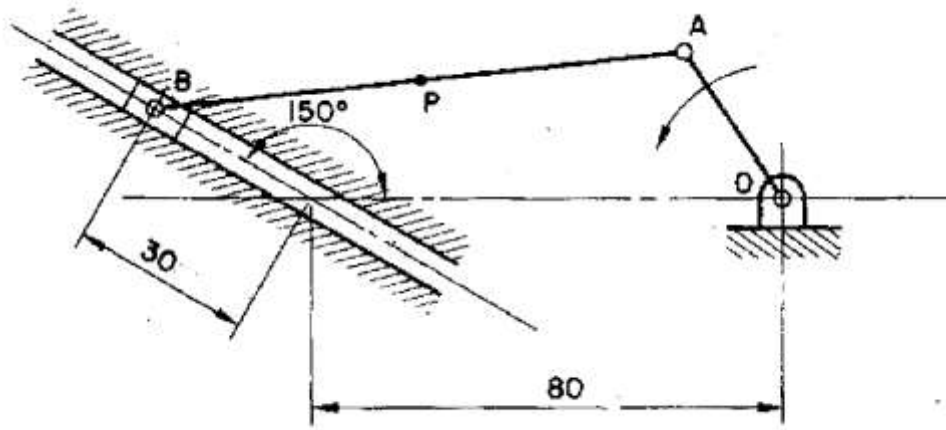
**FIG 1**



**FIG 2**



**FIG 3**



**FIG 4**