

QUESTION 2: LOCI (MECHANISMS)

Given:

- A mechanism consisting of a movable slider DF and a T-piece ABC
- FIGURE 1: An oblique drawing of the mechanism
- FIGURE 2: A schematic drawing of the mechanism
- Point G as the reference point on the drawing sheet

Motion:

Pin E, located on slider DF, slides freely in groove AB to its furthest position on the left, then to its furthest position on the right. Slider DF moves freely around a fixed pin G located on the T-piece ABC.

Instructions:

- 2.1 Draw, to scale 1:1, the given schematic drawing using point G as the reference point. Include ALL labels.
- 2.2 Trace the locus of point D for the complete movement of the slider.
- 2.3 Trace the locus of point F for the complete movement of the slider.

- Show ALL necessary construction. [33]

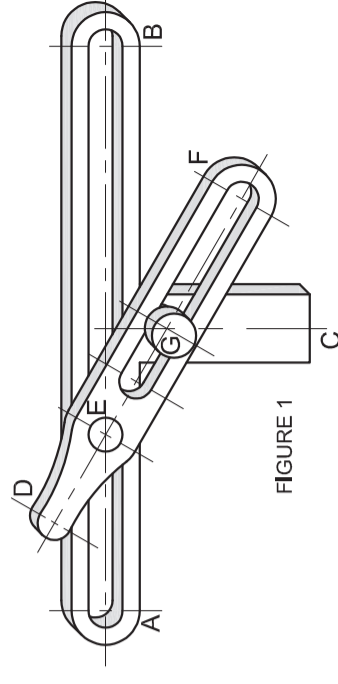


FIGURE 1

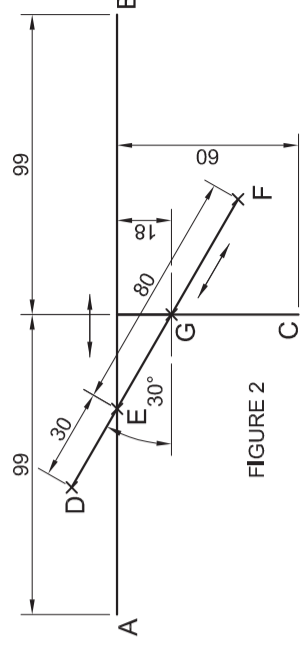


FIGURE 2

ASSESSMENT CRITERIA	
GIVEN + LABELS	6
CONSTRUCTION	6
LOCUS D + CURVE	11
LOCUS F + CURVE	10
TOTAL	33
EXAMINATION NUMBER	
EXAMINATION NUMBER	3



QUESTION 2: LOCI (MECHANISMS)

Given:

A mechanism consisting of a crank OP that is pin-joined to a slotted link AB. The slotted link AB slides over a fixed pin R that is located on the circumference of a wheel, centre Q.

FIGURE 1: A detailed drawing of the mechanism

FIGURE 2: A schematic drawing of the mechanism

Motion:

Crank OP rotates in an anti-clockwise direction while the wheel, centre Q, rotates at the same speed in a clockwise direction. The slotted link AB slides over pin R during the rotation.

Instructions:

- 2.1 Draw, to scale 1:1, the given schematic drawing using point O as a reference point. Include ALL the labels.
- 2.2 Trace the locus generated by point A of the slotted link for one revolution.
- 2.3 Trace the locus generated by point B of the slotted link for one revolution.

- Show ALL necessary construction. [33]

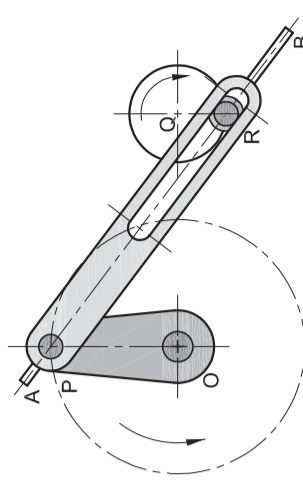


FIGURE 1

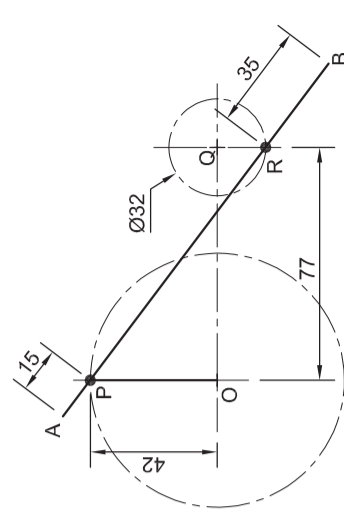


FIGURE 2

ASSESSMENT CRITERIA	
GIVEN + LABELS	5
CONSTRUCTION	8
LOCUS A + CURVE	10
LOCUS B + CURVE	10
TOTAL	33
EXAMINATION NUMBER	
EXAMINATION NUMBER	3



QUESTION 2: LOCI (MECHANISMS)

A manufacturing company designed a mechanism to open and close a mechanical gate on an assembly line in a bottling plant.

The mechanism consists of a crank, OA, attached to a shaft which rotates clockwise at a constant speed about a centre point O. Rod AB, attached to the crank at A, slides freely through a fixed point at C. AB rotates freely about point A.

During the design process the loci generated by points B and E on the moving parts of the mechanism had to be established.

Given:

FIGURE 1: A drawing showing the assembled parts of the mechanism.

FIGURE 2: A schematic drawing of the moving parts of the mechanism.

Instructions:

- 2.1 With point O as a reference, draw FIGURE 2 full size.
- 2.2 Trace the locus generated by point B located on the rod AB.
- 2.3 Trace the locus generated by point E located on the rod AB.

- Show ALL necessary construction.

[33]

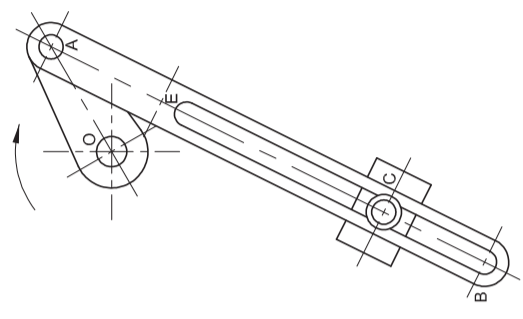


FIGURE 1

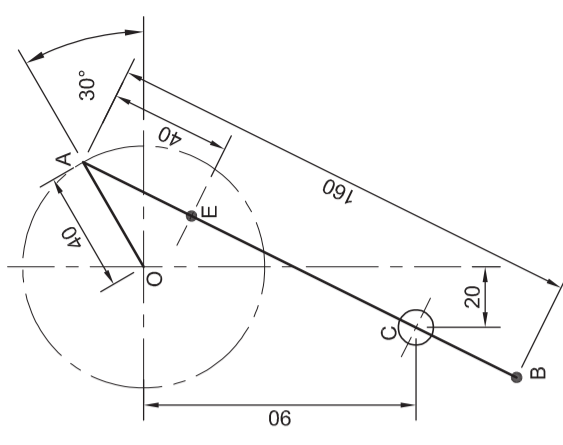


FIGURE 2

ASSESSMENT CRITERIA	
GIVEN FIGURE	4
CONSTRUCTION	3
LOCUS B	13
LOCUS E	13
TOTAL	33

EXAMINATION NUMBER	
EXAMINATION NUMBER	3