SHEET 1

PENANG SANGAM HIGH SCHOOL

P. O. BOX 44, RAKIRAKI

LESSON NOTES - 8

SUBJECT: TECHNICAL DRAWING

Strand	TD13.1 GEOMETRY
Sub - Strand	TD13.1.3 Cams
Content Learning Outcome	TD13.1.3.1 Develop the profile of cams offset from the follower for various types of motions.

<u>Cams</u>

Learning Outcomes

By the end of this topic, students will:

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- define cam.
- construct the profile of a cam and displacement graph offset to various followers • for one revolution for one, two or more types of motions.
- interpret the profile of the cam and its displacement graph. •

Introduction

- A cam is a component on which a particular profile has been machined. •
- The profile of the cam imparts (causes) a follower to move in a particular way.
- This can be seen if we examine the diagram below. •
- As the shaft is rotated the cam rotates with it causing the follower to move up ٠ and down.

Types of follower:

There are three main types of follower:

- the knife edge follower (seen in the cam and follower system table below) •
- the roller follower (seen in the cam and follower system table below)
- the flat follower (seen in the cam and follower system table below).





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Worked Example:

Draw the cam profile for following conditions:

Follower type = Knife edged, in-line; lift = 50 mm; base circle radius = 50 mm; out stroke with SHM, for 60° cam rotation; dwell for 45° cam rotation; return stroke with SHM, for 90° cam rotation; dwell for the remaining period.

Displacement diagram:



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Cam profile:

- 1. Construct base circle.
- 2. Mark points 1, 2, 3....in direction opposite to the direction of cam rotation.
- 3. Transfer points **a**, **b**, **c**....**l** from displacement diagram to the cam profile and join them by a smooth free hand curve.
- 4. This forms the required cam profile.



Draw the cam profile for the same operating conditions same as above with the follower offset by 10 mm to the left of cam center.

Displacement diagram: Same as previous case.

Cam profile:

Construction is same as previous case, except that the lines drawn from 1, 2, 3.... are tangential to the offset circle of 10 mm dia. as shown in the figure below.



SHEET 2

QUESTION 1

Draw the cam profile for following conditions:

Follower type = Knife edged, offset by 10 mm to the left of cam center;

lift = 40 mm;

base circle radius = 40 mm;

out stroke with SHM, for 60° cam rotation;

dwell for 45° cam rotation;

return stroke with SHM, for 90° cam rotation; dwell for the remaining period.



NOTE: Displacement graph is drawn not to scale

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