

IV B.Tech I Semester Supplementary Examinations, November 2005
ADVANCED KINEMATICS & DYNAMICS
(Mechatronics)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
 All Questions carry equal marks

1. (a) What is mobility?
 (b) Explain Grubler criterion for plain and spatial mechanisms with examples. [4+12]

2. The mechanism shown in the figure.1 is driven by link 2 at $w_2 = 60$ rad/sec ccw. Find the angular velocities of link 3 & 4.
 $O_2A = 40mm$
 $BA = 100mm$
 $O_4O_2 = 100mm$
 $BO_4 = 120mm$ [16]

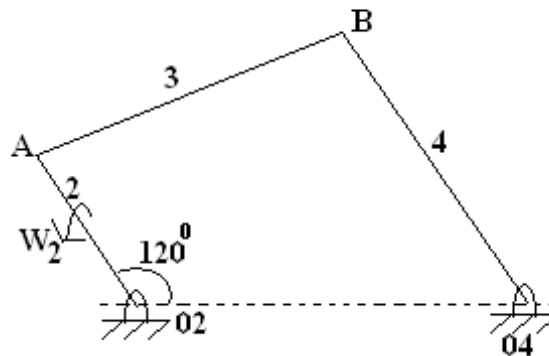


Figure 1:

3. What is meant by coupler curves? And explain how to construct the coupler curve for the four bar link mechanism. [16]

4. Explain the angular velocity ratio theorem with example. [16]

5. What moment 'M' must be applied to the crank of the mechanism shown in the figure2. if $p=900N$?
 $AB=350mm$
 $OA=75mm$

6. What is inertia force and explain D Alemberts principle. [16]

7. Explain the overlay method with example. [16]

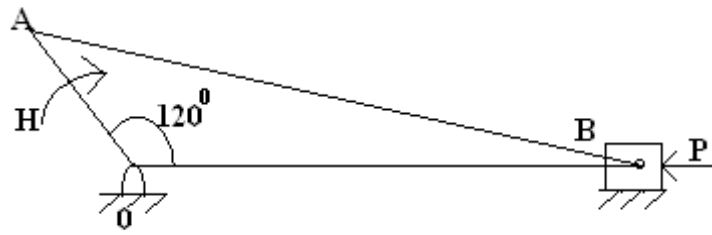


Figure 2:

8. Write a short note on:-

- (a) Vector representation of velocity and acceleration
- (b) Position synthesis.

[16]
