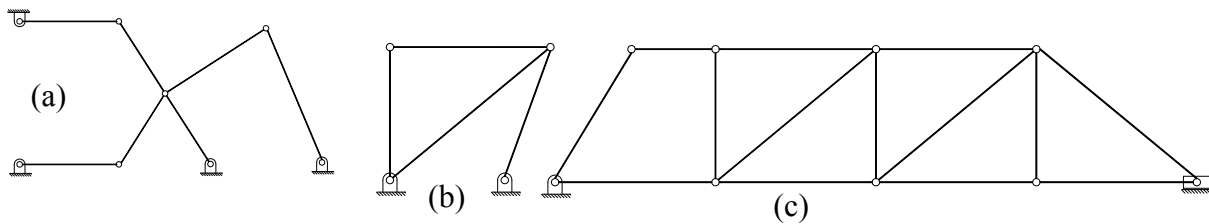
	Alexandria Higher Institute of Engineering & Technology (AIET)		
	Mechatronics Engineering Department		4 th Year
	EME 401	Mechanics of machines	Mid Term, Oct.,20,2009
	Examiners:	Dr. Rola Afify and committee	Time: 1.5 hour

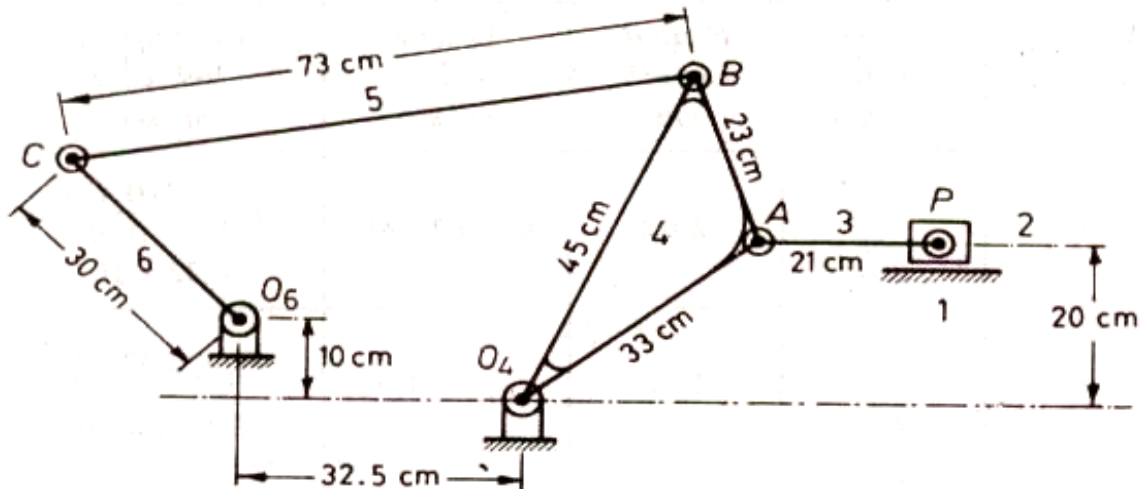
Question (1)

- I) What are the types of kinematic chain? Sketch and explain an inversion for each type.
- II) Explain, with neat sketches, the types of lower and higher pairs.
- III) Determine the number of degrees of freedom.



Question (2)

The slider 2 (point P) moves to the left at constant velocity of 1 cm/sec. For the configuration shown, determine the angular acceleration of links 3 and 6. Also, calculate the rubbing velocity at joint C (the diameter of this pin joint = 1 cm).



(Hint: draw the mechanism with scale $1\text{ cm} = 10\text{ cm}$, the velocity polygon with scale $1\text{ cm} = 0.5\text{ cm/sec}$ and the acceleration polygon with scale $1\text{ cm} = 0.1\text{ cm/sec}^2$).