	Alexandria Higher Institute of Engineering & Technology (AIET)	
	Mechatronics Engineering Department	4th Year
EME 401	Mechanics of machines	Mid Term, Dec.,19,2009
Examiners:	Dr. Rola Afify and committee	Time: 1.5 hour

Question (1)

I) What are the types of links? Sketch each type.

II) What are the types of kinematic chain? Sketch and explain an inversion for each type.

III) Determine the number of degrees of freedom.

(a)   (b)
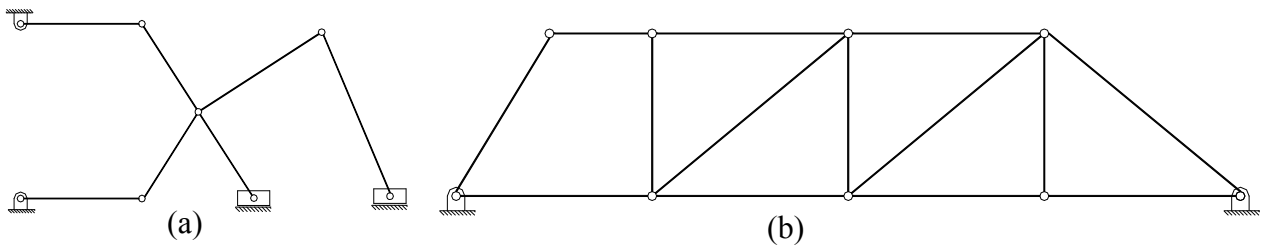
Question (2)

The crank O_1A rotates clockwise at a uniform speed of 120 rpm. The block D moves vertical guides. For the configuration shown, find the velocity of the block D and the angular velocity of link CD. Dimension of various links are:

$O_1A = 6$ cm, $AB = 18$ cm, $O_2B = 10$ cm, $O_2C = 18$ cm, $CD = 27$ cm. Draw the mechanism and the velocity polygon with a suitable scale.

Good Luck