Mansoura University		3rd Year
Faculty of Engineering		16 January 2013
Textile Engineering Department	Selective Course (1) Mechanics of Knitting Machines	Time: 1.5 hours
		Code: TXE 6315

Answer the Following Questions:

(1)A) Explain with illustration motion transport method from the motor to the various movable parts in circular knitting m/c.

[5 marks]

B) Show with illustration yarn threading –up method beginning from the cone to the feeders in circular knitting machines.

[5 marks]

(2) Derive from the first principles, the expressions for the loop length,yarn velocity,yarn acceleration and maximum yarn tension at the knitting points imposed by knitting action using the following Data:

Machine cylinder diameter=12 inch

Cylinder speed=200 r.p.m

Machine gauge=20

Linear cam angle=30 degrees

Yarn count(Ne)=28/2   [20 marks]

(3) For a latch needle descending without yarn in linear cam track, Prove the following relationships:

$$R = \frac{P_0}{[(1-\mu^2)\cos\theta - 2\mu\sin\theta]}$$

$$S = \frac{P_0(\mu\cos\theta + \sin\theta)}{(1-\mu^2)\cos\theta - 2\mu\sin\theta}$$

Where θ = linear cam track angle.

P_0 = the force required to move needles downward against the spring pressure

μ = coefficient of friction between needle butt and cam track.

R = the reaction force of the butt of the needle on the cam face.

S = side way force between needle and cylinder wall.   [15 marks]

With my best wishes
Prof. Dr. Hemdan Abou-Taleb