



*Mansoura University
Faculty of Engineering
Textile Engineering Dept.
Fourth Year Textile*

*Weaving Technology (3)
Part II
Time: 1.5 hours
Date: 24 /1 /2012*

Please attempt the following questions:

Question number one [12 degrees]:

Write briefly what you know about:

- (i) Products of narrow weaving machines,
- (ii) Differences between single-phase weaving and multi-phase weaving,
- (iii) Multi-phase weaving, and
- (iv) Narrow-fabric weaving machines.

Question number two [10 degrees]:

Explain with neat sketches:

- (i) The principle of multi-phase weaving in warp direction,
- (ii) The principle of multi-phase weaving in weft direction,

Question number three [12 degrees]:

Derive expressions for:

- (i) *weaving speed (picks/min.)* on multi-phase weaving machine M8300 in terms of rotor velocity V_r (m/min), division angle θ (degrees), rotor diameter d (cm), and reed height h (cm).
- (ii) *warp thread strain* on multi-phase weaving machine M8300 in terms of rotor diameter, rotor division angle, reed height, and warp free length assuming that the shed is of the upper type.
- (iii) *weft insertion rate* on a multi-phase weaving machine.

Continue

Question number four [20 degrees]:

Estimate:

- (i) weft insertion time, shed change time, weft insertion rate, and average weft insertion speed at a weaving speed of 600 p.p.m. if weft insertion angle is 150° and weaving width is 140 cm.
- (ii) average beating-up speed which synchronizes with 125° of weaving cycle if beating-up distance is 6 cm, and weaving rate is 655 p.p.m.
- (iii) warp thread strain on multi-phase weaving machine M8300 if :
 - Number of reeds = 12,
 - Rotor diameter = 30 cm,
 - Reed height = 4 cm,
 - Warp free length = 150 cm ,and
 - The shed is of the upper type
- (iv)

- Division angle,	- Picks/min.,
- Angular velocity of rotor,	- Warp speed,
- Time of one pick,	- Velocity of the reed,
- Fabric speed,	- Number of rubbing times, and
- Rotational speed of rotor.	

On a rotor- multiphase weaving m/c of 2- m reed width to achieve a weft insertion rate of 6000 m/min. in a fabric of the following specifications:

* Picks/cm = 32, and

* Warp crimp ratio = .08

if rotor specifications are:

* Rotor diameter = 30 cm,

* Reed height = 3 cm, and

* Number of reeds = 12.

With best wishes of

Dr. Hamdy Ahmed Abd Allah Ebraheem