

Major Test

TTL242 Technology of Textile Coloration

Date: 9th May 2007-05-08
Time: 0800-1000 hrs

Max. Marks: 30

Note: Attempt all questions. Answer Part I and Part II separately as instructed.

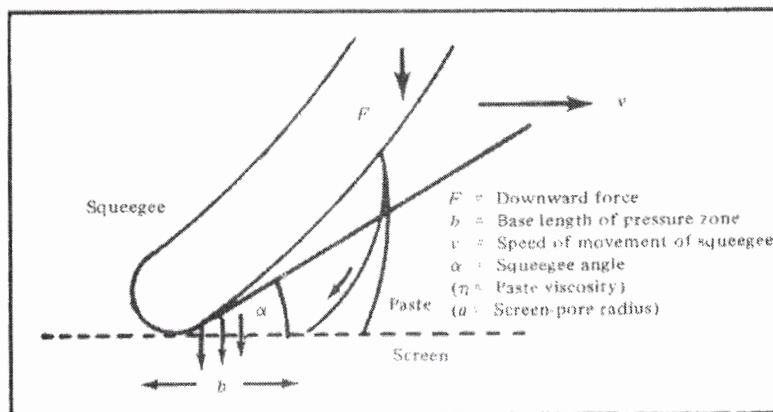
Part I

Note: Answer all questions in brief.

1. Soaping at boil.changes the final shade obtained with vat dyes significantly. Give three reasons. [1.5]
2. In dyeing with direct dyes what is late exhaustion and how can it be avoided? [1.5]
3. What is the role of alkali in (give reaction) [2]
 - a) Naptholation of azoic colours
 - b) Vatting of vat dyes
4. With reactive dyes, how is the wastage of dyes minimized? [1]
5. Scouring of wool with soap is not recommended before dyeing, why? [1]
6. Trichlorotriazine can react with amines, alcohols and water. Show how these reactions take place during manufacturing of reactive dyes, and during application to cellulosic fibres and protein fibres. [3]

Part II

1. Consider the following diagram and state giving reasons as to what would happen to the hydrodynamic pressure on the paste between wedge and screen (which is needed to push the paste through the screen), if, keeping other parameters constant,
 - a) squeegee angle α is decreased
 - b) viscosity of paste is increased
 - c) speed of squeegee, v is increased



2. A 1.5 m wide printed cotton fabric (150 GSM, dry weight) has to be dried in a typical hot air drier after washing and centrifuging. Calculate the energy consumed in, k cal per kilogram of water evaporated if,
- The ambient temperature is 25°C , the temperature of drier is 130°C and the temperature of the fabric at the exit is 100°C ,
 - Specific heat of

water	= $1.0 \text{ k cal}^{\circ}\text{C} / \text{kg}$
air	= $0.24 \text{ k cal}^{\circ}\text{C} / \text{kg}$
vapour	= $0.46 \text{ k cal}^{\circ}\text{C} / \text{kg}$
fabric	= $0.32 \text{ k cal}^{\circ}\text{C} / \text{kg}$

 while the latent heat of evaporation of water is $540 \text{ k cal} / \text{kg}$
 - Wet expression is 50% and whole of the water is to be evaporated.
 - Humidity of the exhaust is $0.15 \text{ kg water} / \text{kg exhaust}$

If the cost of energy is Rs. 5 / kW-h, what is the cost of drying per meter of fabric?
Assume $1 \text{ k cal} = 4.186 \text{ kJ}$

[3+1=4]

3. Answer, in brief, giving reasons, why
- Starch paste is not recommended for reactive printing
 - Thixotropic materials are preferred as thickening material in printing
 - Printing of wool with vat dyes is not common
 - During the preparation of rotary screens mandrel needs to be passivated before developing screens by electroplating. [4]
4. Do as directed,
- Zero solid thickenings are desirable in pigment printing. Why? How does one obtain such a thickening?
 - Describe with the help of a diagram a typical fabric speed control through the drier.
 - A single wavy streak was found on a roller printed fabric. What is it due to?
 - How design is transferred onto a roller? Describe any one principle.
 - Write the structure of guar gum. What is a special characteristic of this thickening agent? [5]
5. Differentiate between,
- Methods and styles of printing
 - Analog and digital printing
 - Galvano and lacquer rotary screens
 - Chemistry of Rongalite C and resist salt [4]

----End of question paper----