TXL 241: TECHNOLOGY OF TEXTILE PREPARATION AND FINISHING

Major Test **Max. Marks-40** **10.30-12.30 /06-05-2017/LH-111,114**

Attempt all questions

Use separate answer sheet for PART-A and PART-B

PART A

1. What bleaching agent will you choose for bleaching of cotton/PET blend fabric and why? Rate of oxidation is highest at neutral pH during bleaching of cotton fibre using Sodium hypochlorite still bleaching is generally carried out at alkaline pH – why? [1.5 + 1.0]

2. If cotton fabric is sized with mixture of natural and synthetic sizing agent, what would be your preferable desizing agent and why? TEGEWA scale is used to assess the desizing efficiency yet scale is used after H_2O_2 bleaching also – Comment. [1.5 + 1.0]

3. Wool needs to be scoured both in loose fibre (raw) form and also in fabric stage – why? Do you recommend mineral acid for improved degumming efficiency of silk – justify your answer. [1.0 + 1.0]

4. Elongation at break (%) increases once the mercerization of cotton fabric is carried out under slack condition – elaborate your answer giving suitable reason/s. Do you suggest to carry out mercerization of cotton fibre at around 8% NaOH concentration as maximum swelling happens at this concentration – Justify your answer? Calculate the BAN for un-mercerized cotton. [2 + 1+1]

5. Do you agree with the statement? The statement is: "Bluing agent suppresses the total reflectance of the fabric whereas OBA actually enhances it" – Illustrate your answer with technical facts? [2]

6. Illustrate 'roll-up' mechanism for removal of an oily dirt from cotton surface using a surfactant (you can use force balance equation). What is the HLB value of a surfactant blend consisting of 20% tween20 (HLB 16.7), 30% span20 (HLB 8.6) and 50% span80 (HLB 4.3)? [2 + 1]

7. **Justify** the following statements with **a suitable reason: (Statement can be T/ F)** [1 × 4]
   a) Staining of degummed silk with direct dye can provide some idea on the degumming efficiency.
   b) Sodium silicate is generally used as stabilizer in case of cotton bleaching with H_2O_2 whereas it is not recommendable for wool bleaching using the same bleaching agent.
   c) There is a saving in dye consumption of the 'Textile Process House' once the dyeing order comes for 'mercerized cotton' rather than unmercerized lot.
   d) Alpha amylase can easily attack in the 1,4 glucoside linkage of cotton fibre.

P.T.O.

PART B

1 Giving **reasons**, state whether the following statements are **true** or **false**,

a) Epichlorohydrin does not crosslink with cellulose because it has only one epoxy group while succinic acid crosslinks because it has two carboxylic groups

b) Foam finishing consumes more energy because of the increase in volume of liquor after foaming

c) Steam setting of wool is reversible.

d) Wurlan process uses interfacial polymerisation to mask the scales with nylon 66 polymer

e) Expander bars rotate on curved axis and are used to on open-width processing machines

f) Dual action flurochemicals demonstrate high interface energy in air as well as in water [6]

2 Cotton fabric (100 GSM) is to be dried in a typical stenter. Calculate the energy consumed (k cal/kg water) in evaporation of water if ,

i) The ambient temperature is 25 ^{0}C , the temperature of stenter 140^0 C and the temperature of the fabric at the exit is 100^0 C,

ii) Specific heat of

water	= 1.0 k cal/^{0}C / kg
air	= 0.24 k cal/^{0}C / kg
vapour	= 0.46 k cal/^{0}C / kg
fabric	= 0.32 k cal/^{0}C / kg
and latent heat of evaporation of water	= 540 k cal/ kg

iii) Wet expression is 60% with the solution containing 10% flame-retardant chemicals

iv) Whole of the added water is to be evaporated

v) The exhaust has 0.1 kg water / kg exhaust [4]

3 Write short notes on any **five** of the following topics [10]

a) Mechanism of flame retardancy

b) Principle of LOI measurement

c) Permanent setting of wool fabrics: Why and how?

d) Antistatic finishing of synthetics is a necessity

e) Waste heat recovery from stenters

f) Role of Electro-kinetic potential in textile wet processing

g) C_8 vs C_4 Fluorochemicals

h) Sanforization for reducing fabric shrinkage during washing

.....The End of the Question Paper.....