TXL 241: TECHNOLOGY OF TEXTILE PREPARATION AND FINISHING

Major Test **Max. Marks-40** **0800-1000 hrs. /10-05-2016/LH-410**

Note: Attempt all of questions. Answer Part A and Part B on separate answer books

PART A

1. Do you suggest to carry out bleaching of cotton at pH 7.0 using NaOCl as the rate of oxidation is highest in this pH? Explain your agreement / disagreement with suitable reason/s. Why do you go for combined oxidative reductive bleaching to obtain white colour wool? What is the role of stabilizer in peroxide bleaching? [2 + 1 + 1]

2. Wool needs to be scoured both in loose fibre (raw) form and also in fabric stage – why? Do you recommend to use 'cotton scouring recipe' for wool scouring to obtain better scouring effect of wool? – justify your answer. [1.5 + 1.5]

3. Mercerized cotton has both better dye ability and improved visual colour yield – explain your answer. Hot washing is required once cotton/viscose blend is mercerized – why? Do you think that strength of cotton fibre increases once it is mercerized under slack condition? - elaborate your answer with suitable reason/s. [2 + 1 + 1]

4. Differentiate between 'blueing agent' and 'OBA'. Do you expect any improvement in whiteness value of the cotton fabric once it's desized with potassium persulphate - explain? [1 + 1]

5. Calculate the required HLB value for the oil phase of the following O/W emulsion: [2]
   Rx,
   Cetyl alcohol: 15 g
   White wax: 1 g
   Lanolin anhydrous: 2 g
   Emulsifier: 0.05 g
   Glycerin: 5 g
   Distilled water to 100 g
   (HLB of cetyl alcohol = 15; HLB of white wax = 12; HLB of lanolin anhydrous = 10)

6. **Justify** the following statements with **a suitable reason: (Statement can be T/ F)** [1 × 5]
   a) For enzymatic desizing of cotton, non-ionic surfactant should be used as a wetting agent instead of anionic one.
   b) 'Copper number' is a measure of degradation occurs in cellulose
   c) After degumming operation, water absorbance of silk increases
   d) During mercerization with a certain conc. of NaOH, swelling of cotton increases with increasing temperature.
   e) Mercerization of cotton can be combined with scouring

PART-B

7. Giving appropriate reasons, state whether the following statements are true or false 5

a) Woollen fabrics show better crease recovery than viscose fabrics
b) Epimines react with cellulose in alkaline medium
c) Three-bowl padding mangle can be used to substantially reduce the wet expression
d) Poly(dimethyl) siloxane is a more effective water repellent than Poly (diethyl) siloxane
e) THPC imparts glow resistance

8. Write short notes on any **three** of the following: 6

a) Mechanism of crosslinking with N-methylol compounds using metal salts as catalysts
b) Dual action fluorochemicals
c) Mechanical finishing
d) Non-formaldehyde crosslinking agents
e) Strategies for imparting flame retardancy to textiles
f) Low-liquor techniques in finishing

9. Write down the principles for characterization of textiles treated with 6

a) Softeners
b) Water repellents
c) Flame retardants

10. In the context of drying on a stenter, calculate,

a) The add-on (%), if the fabric is padded with 5% solution of a flame retardant when the wet expression set on the mangle is 60%. Assume that the fabric before and after the treatment is bone dry. 1
b) The total energy consumed in evaporation of water (kcal) in an 8-hour shift, if the production rate is 500 kg per hour. Assume that the latent heat of vaporization of water = 539 cal/g and all other losses amount to 15% of the total energy consumed. 2

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