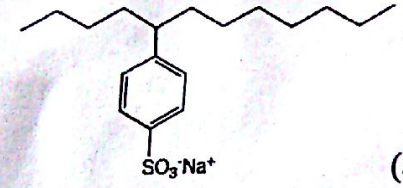
Technology of Textile Preparation and Finishing (TXL 141)

Major Test **Max. Marks – 50** **8:00 – 10:00 AM/06-05-2015/V-LT1**

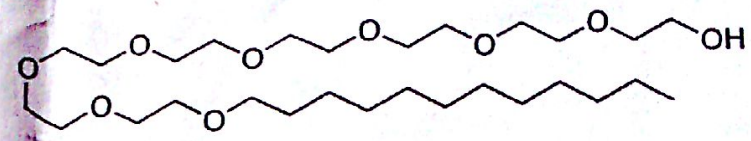
Attempt all questions. Answer PART-A (15 Marks) & PART-B (35 marks) into two different sheets

PART-A (Max. Marks: 15)

1. Identify the type of surfactant from among the followings: [1]

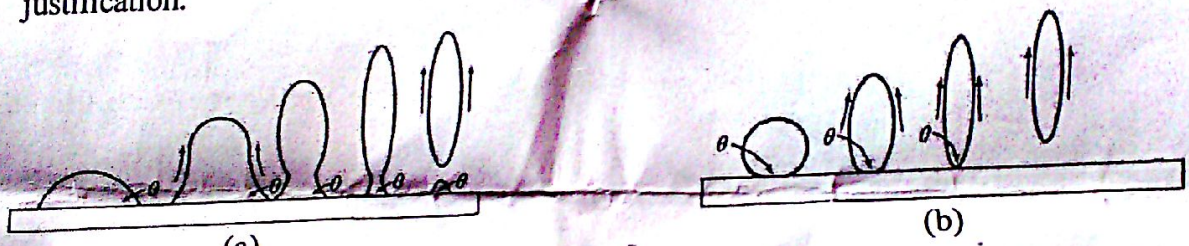


(a)



(b)

2. In the figure given below, two mechanisms of soil removal are shown. Identify them with justification. [2]



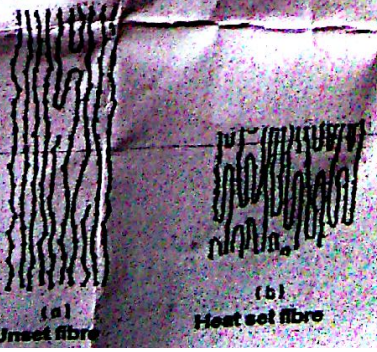
(a) (b)

3. In context of surfactants, what is the difference between emulsification and solubilization? [1]

4. In a textile process house, cotton is desized with enzyme, scoured with solvent and bleached with H_2O_2. The bleached fabric is white but has light brown/black spots. Comment. [2]

5. Why shouldn't the bleaching of cotton be carried out in acidic medium with sodium hypochlorite? [2]

6. In the following figure the two figures show the finer structure of a fibre before and after heat setting. Write down the heat setting conditions and the mechanical and physical properties of the heat set fibre as compared to unset fibre. [3]



7. Even though the maximum swelling of cotton fibres occurs at around 10% NaOH concentration but still the mercerization is carried out at much higher concentrations. Justify. [1]

8. **Fill in the blanks:** [1x3]

I. In bleaching with sodium chlorite, the bleaching species is _____

II. BAN of unmercerized cotton would be around _____

III. Approximate concentration of Marseille soap used in silk degumming is _____

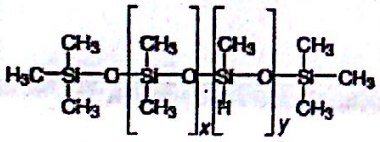
PART-B (Max. Marks: 35)

9. Draw a typical Temperature-Moisture profile of a fabric in the stenter frame (both drying and curing). If the fabric content in a stenter is 20 meter and the fabric speed is 40 meter / min, calculate the curing time. Mention different 'low wet pick-up' methods for application of different finishing agents on textile substrates. [3 + 1+ 1]

10. What is the difference between pyrolysis and combustion? Discuss various strategies of flame retardant finishing of cotton substrates. [1 + 3]

11. Mention the principal mechanisms of (a) antistatic finishing (b) action of cellulase on cellulose (c) anti-pilling finishing. [2 +2 + 2]

12. Clearly identify the technological difference between Gore-Tex and Sympa-Tex fabric. What is the significance of using both 'x' and 'y' component in the silicon based water repellent finishing agent (structure given at below). What is 'lotus' effect? [2 + 2 + 2]



13. Differentiate between 'bacteriostatic' and 'bactericidal' antimicrobial agent. Mention various methodologies to impart antimicrobial finishing to textile substrates. [2 + 2]

14. What are the objectives of 'milling' in wool finishing? Recommended washing temp. for wool is ~ 40 °C – Comment. What are the various responsible factors to affect solar protection factor (SPF) of a fabric? [1 + 1 + 2]

15. **Comment with suitable justification** [1 × 6]

I. Quaternary ammonium compounds can be used as softener, antimicrobial as well as antistatic agent.

II. Urea/Formaldehyde (U/F) can be used both for hand builder and anticrease finishing of cotton.

III. PET/Cotton blend has severe pilling problem as compared to 100% cotton fabric

IV. Polyurethane (PU) can be used as a coating material for water proof fabric whereas polystyrene is not so effective.

V. It's recommended to use anionic softener (not the silicon softener) for bath towels.

VI. Methylol-5,5 dimethyl hydantoin is a renewable bound type antibacterial agent for cotton fabric.