Major Test
TTL724: TEXTURED YARN TECHNOLOGY

DATE 2-12-2006 **MAX. MARKS: 30**
TIME: 1300-1500 hrs

Note: Attempt any number of questions or parts thereof.
Parts of a question should be answered together.
Give brief and to-the-point answers

1 In the context of chemical and / or solvent texturing, comment on the following statements. Write true or false giving appropriate reasons
   a) Aluminum mono-hydrogen phosphate is a phase separation catalyst.
   b) The mixture of citric acid and $MgCl_2$ brings down the temperature of curing.
   c) Solvent induced crystallization takes place during solvent uptake and not during solvent removal
   d) According to Hildebrand and Scatchard hypothesis, mixing of solvent and polymer is either endothermic or athermic.
   e) Equilibrium shrinkage curves give a fairly good idea of the T_g of the solvent polymer system.
   f) Acetone water mixture and not pure acetone is suggested for texturing of acetate yarns.
   g) Basic aluminum chloride is a self-neutralizing catalyst.
   h) Steam setting of wool although is stable to room temperature washing but is reversible nevertheless.
   i) Turbo Stapler is used to produce shrinkable acrylic fibre.
   j) Improving the bearing design can substantially reduce aerodynamic noise in pin type false twist texturing machine. 10

2 Write short notes on
   a) Mechanism of interlacement in filament yarn
   b) Mechanism of bulk development in spun yarns in the context of the air jet texturing
   c) High temperature texturing
   d) High speed texturing
   e) Solvent texturing of polyester
   f) Durable texturing of wool
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3 Differentiate and distinguish between
   a) BCF and Stuffer box textured yarns
   b) Hemajet and Taslan type XX jet 4

4 Design an apparatus for false-twist texturing of polyester-viscose yarn. Modify your design / process for affecting simultaneous dyeing and texturing of such yarns. 6

5 If you were to produce a bulk yarn of jute /polypropylene blend, what process will you adopt? Justify. Design a process for producing such a yarn using your process. What is the likely application? Draw the stress- strain behaviour of such a yarn. 4

6 What are the advantages of Ringtex system over stacked disc system of twisting? Derive an expression for the contact length S, in terms of r_1, outer radius, r_2 inner radius and φ, half of ring crossing angle. Calculate the value of S (in mm) if r_1, r_2 and φ are 24 mm, 14 mm and 45 ^{0} respectively. What is the major limitation of Ringtex system and why? 6

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