

## TTL763 Technical Textiles

Major

Duration: 2 hrs

Max. Points: 40

**Each question carries 5 points**

1. Explain the efforts made with textiles to create *100% recyclable automotive seats*? [3] How do *Struto nonwovens* and *Polyurethane foams* differ towards the structural and comfort performance in a car seat? [2]
2. How *automobile headliners* are made? [2] Discuss on the limitations of the conventional materials used and the alternative materials that are being tried out. [3]
3. According to UIAA the maximum tolerable load for humans is 2650 lb. The level of strain for three ropes at the survival load is as follows:  
Steel rope = 0.01; Rope A = 0.1; Rope B = 0.32. Determine the possible fall factors for threshold survivability for a climber of 180 lb for all the three ropes. Assume linear stress – strain relationship for all the three ropes.
4. In what way a fibre rope is superior to wire rope? [2] Compare the properties of fibre ropes with different constructions. [3]
5. What is the role of textile felts in the paper making process? [2] How do different types of press felts used for making paper differ in the structure and performance? [3]
6. How electrically charged fibres are manufactured for filtration applications? [2]  
Explain under what conditions one can get a) concave-up b) concave-down and c) linear drag Vs. time curves. [3]
7. What levels of efficiencies that ULPA type of filters should have? [2] What are the difficulties that mechanical type of filters have in meeting these levels of efficiencies? [3]
8. What factors influence the soil to fabric friction in geotextile applications? [2] How the soil to fabric friction is characterized? [3]