TTL 763 Technical Textiles
Major

Duration: 2hrs

Max Marks: 40

Be brief in your answers

1. Name three methods for manufacturing water vapour breathable fabrics for an apparel for active sportswear. (3)
2. Discuss a method **(with figure)** of measuring water vapour permeability driven by the vapor concentration difference. (4)
3. What is biofunctional finish? Discuss any associated problem with such finish. (1+1)
4. Discuss a bilayered construction **(with figure)** for water impermeable, moisture vapour transmissive material and comment on the choice of raw materials. (1+1)
5. With **diagram** discuss the use of a vertical skin simulator in sports textiles (3)
6. You are asked to design a composite for automotive application with the following requirements a) Sufficient stiffness and strength to protect the occupant in the event of a low-speed collision b) Progressive and controlled failure of the structure in order to reduce the risk of injury in a high speed collision

   i) Give a **flow chart** for the manufacturing of the composite (justifying your choice of materials and process) to meet the above requirements. (3)

   ii) In such a composite, **discuss how the above two points** would be taken care of. (3)

7. Define the following terms as used in Ballistic textiles: a) Blunt trauma b) Secondary yarns c) Unit volume energy d) Spectra (2.5x4=10)

8. Choose fiber/films used in filters, justifying your choice, for (a) extreme acid and basic environments (b) Hot situation, with temperatures above 280 deg C (2x2=4)

9. Explain the following graphs from your understanding of filtration. (2x3=6)