

MAJOR : 2022

TXL 372 : Speciality Yarns and Fabrics

Part A : Speciality Yarns

Max. Marks : 30

1. Describe the required characteristics of fiber-based conductive materials for the manufacturing of conductive yarns. Justify that the properties of the core spun yarn produced on ring spinning system depends on metal filament feeding parameters. (8)
2. Suggest the types and properties of fibres required for sewing threads for outdoor and high temperature applications with justifications. (8)
3. Describe with justification the importance of adequate fiber-matrix adhesion and matrix viscosity to achieve the required characteristics of hybrid yarns. (7)
4. How to exploit the characteristics of individual fibre in layered structure of yarn to improve the compression and recovery properties of wool carpet. Explain with suitable example. (7)

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Part B : Speciality Fabrics

Max. Marks : 30

1. Explain following relationships with suitable diagram

- i. Weave design in terms of number of cross over points of 3D solid structure with their impact energy absorption
- ii. Junction strength of stitched, integrated and base fabric of 3D profiled woven structure
- iii. Load -Elongation behaviour of Plain vs Multi-axial fabric
- iv. Tensile strength of UD, 2D and 3D woven constructions
- v. Comparison of weft stops for Air-jet and Multiphase weaving on the basis of weft insertion rate

[2x5]

2. Distinguish between interlaced and non-interlaced method of 3D fabric weaving with the help of yarn interlacement diagram. Compare the structure and properties.
[5]
3. Explain method of weaving a H-profile fabric with weave diagram showing warp, weft, number of picks to complete pick cycle and weaving principle.
[5]
4. What is the difference between warp and weft way shed multiphase weaving. Why weft way shed multiphase weaving system is almost obsolete despite high weft insertion rate ?
[5]
5. Explain basic principle of a 3-pick terry weaving showing all loose picks and fast pick insertion to decide pile height. Draw weave design of 3 pick, 5 pick and 6 pick terry fabric. What are all fabric parameters that influence compression properties of terry pile fabric.
[5]

[5]