FUTURE SCOPE OF STUDY

The thesis titled "Optimization of Braided Structures for Civil Engineering Application" provides a foundation for advanced exploration in the domain of braided structures and their applications. The following future research directions can be pursued to expand the study:

Material Innovations:

- Explore alternative high-performance fibres such as aramid, carbon, or ultra-high-molecular-weight polyethylene (UHMWPE) for braided structures.
- Study the effects of fiber surface treatments or coatings to enhance adhesion between fibers and resin in braided composite rods (BCRs).

Optimization of Structural Design

- Develop computational models to predict the mechanical behaviour of braided ropes and composite rods based on variations in yarn properties, braid angles, and layering techniques.
- Explore advanced braiding techniques, such as square braiding or hybrid braid patterns, to achieve superior strength, stiffness, or energy absorption characteristics.

Mechanical Performance under Diverse Conditions

- Conduct creep and relaxation studies to evaluate the time-dependent deformation behavior of braided ropes and BCRs under sustained loads.

Cross-Disciplinary Applications

- Extend the findings to other industries, such as aerospace, automotive, or marine, where braided composites may offer innovative solutions.
- Investigate the integration of braided structures with smart materials for sensor-enabled applications like structural health monitoring in civil infrastructure.