12.1 CONCLUSION

Based on the market survey results, the jacquard fabrics have been designed and developed in adobe Photoshop software with floral/animal motives and both dark and light colours. In total, 90 meters of jacquard fabrics with 15 different designs of three sets each consisting of five designs has been woven for this work. These fabrics were given antibacterial finish and based on the antibacterial efficiency, six fabrics were selected and given other functional finishes such as flame retardancy, water repellency, stain release and insect repellency finishes developing the multifunctional finished jacquard fabrics.

From the test results of the antibacterial finished fabrics, the best six fabric samples, two representing each set are selected and used for multifunctional finishing and testing and then, the characteristics have been studied. Out of best six samples, Sandy flow fabric (B1) has got maximum absorbency of antibacterial finish, because of its fabric structure (surface thickness). After imparting all the physical tests, Sandy flow fabric (B1) has showed better result than the remaining samples.

Flame retardant finish has been imparted to all these fabrics. Out of the six samples, Peacock gold fabric (C2) has maximum flame retardant finish efficiency. The physical properties of the flame retardant finished fabrics such as fabric weight, abrasion resistance, tensile strength and colour fastness are analyzed. Based on the physical test results, Peacock gold fabric (C2) shows better results when compared to other fabrics. The characterization of the best efficient finished Peacock gold fabric (C2) was analyzed by FTIR and SEM test and it shows the uniform deposition of finished chemicals on the surface of the yarn.

Out of the best six samples, after imparting water repellent finish, it is found that Sandy flow fabric (B1) has got maximum level of absorbency of water repellent finish on the surface of the fabric due to its smooth structure and light weight when compared to the other samples.
The physical properties of the stain release finished fabrics such as fabric weight, abrasion resistance; tensile strength and colour fastness are studied. Out of the best six samples, Sandy flow fabric (B1) has got good result with stain release finish and physical tests due to its maximum absorbency of stain release finish when compared to the other samples. Hence the characterization of the best efficient finished fabric Sandy flow fabric (B1) is analyzed by FTIR and SEM. This analysis proves that sample Sandy flow fabric (B1) has uniform deposition of the finished chemicals presented on the surface of yarn.

The physical properties of the mosquito repellent finished fabric such as fabric weight, abrasion resistance, tensile strength and colour fastness are studied. Based on the physical tests, sample Peacock gold fabric (C2) shows better result when compared to the other samples. Hence the characterization of the best efficient finished fabric Peacock gold fabric (C2) was analyzed by FTIR and SEM analysis and it shows the presence of finishing chemicals on the surface of the fabric.

After imparting multifunctional finishes to the jacquard samples the best efficient peacock gold fabric sample (C2) was analysed for the durability of antibacterial activity after different wash cycles. Wash durability test proves that jacquard fabrics treated with multifunctional finishes withstood for up to 20 wash cycles.

Out of six samples, after imparting multifunctional finish such as flame retardant finish, water repellent finish, stain release finish and mosquito repellent finish, sample Peacock gold fabric (C2) has good result because of its smooth surface and its softness when compared to other samples. Hence the characterization of the best efficient multifunctional finished Peacock gold fabric (C2) was analyzed by FTIR and SEM and it proved that there was a uniform presence of multifunctional finishing chemicals on the surface of the fabric.

The six different attractive designs with suitable colour combinations have been used to develop six novel jacquard fabrics. These six fabrics have been used to develop home textiles such as bed sheets; pillow covers and curtains each consisting of two sample fabrics. The constructed pillow cover, bed sheet and curtain have been shown and discussed with 50 leading manufacturers of jacquard woven cotton furnishing fabrics to
get their opinion/feedback about the design created, colours chosen, size and regarding the home textile products. It is observed that, they have given very good feedback about the novel products having multifunctional finishes. Hence, it may be concluded that all the designed and developed multifunctional finished jacquard fabrics observed the imparted multifunctional finishes and showed better result with all the samples. Out of six fabric samples, Peacock gold fabric (C2) has showed the best result when compared to all the other samples.

As a summary, the consumers show interest in buying better, durable and less wash needed fabrics. This experimental study will pave way for improving the quality of value added home textile products with multiple functions.