CHAPTER 9
CONCLUSION IN A NUTSHELL

The following salient conclusion can be drawn based on the study.

- Workability of concrete is seriously affected as the percentage of steel fibres in it increases. Addition of 1% steel fibres result in higher compressive strength and tensile strength and use of more than 1% steel fibres will bring down the compressive strength and tensile strength. Flexural strength is found to increase as the percentage of steel fibres in it increases. Thus, the optimum percentage of steel fibres that can be used is 1% by volume fraction.

- Better value of workability is obtained for (FA+SF), (FA+GGBFS) and (FA+MK) for a combination of (25+5).

- Workability of ternary blended steel fibre reinforced concrete with (FA+GGBFS) combination gives better result as compared to (FA+MK) or (FA+SF) combinations.

- Compressive strength, tensile strength and flexural strength of ternary blended steel fibre reinforced concrete shows higher values at a replacement level of (10+20) with (FA+SF) combination.

- Compressive strength, tensile strength and flexural strength of ternary blended steel fibre reinforced concrete shows higher values at a replacement level of (10+20) with (FA+GGBFS) combination.

- Compressive strength, tensile strength and flexural strength of ternary blended steel fibre reinforced concrete shows higher values at a replacement level of (15+15) with (FA+MK) combination.

- Water absorption and sorptivity of ternary blended steel fibre reinforced concrete shows lower values at a replacement level of (10+20) with (FA+SF) combination.

- Water absorption and sorptivity of ternary blended steel fibre reinforced concrete shows lower values at a replacement level of (10+20) with (FA+GGBFS) combination.

- Water absorption and sorptivity of ternary blended steel fibre reinforced concrete shows lower values at a replacement level of (15+15) with (FA+MK) combination.
Conclusion in a nutshell

- Ternary blended steel fibre reinforced concrete with (FA+SF) combination and with a cement replacement level of (10+20) shows better resistance to a sustained elevated temperature of 200°C and 400°C.
- Ternary blended steel fibre reinforced concrete with (FA+GGBFS) combination and with a cement replacement level of (10+20) shows better resistance to a sustained elevated temperature of 200°C and 400°C.
- Ternary blended steel fibre reinforced concrete with (FA+MK) combination and with a cement replacement level of (15+15) shows better resistance to a sustained elevated temperature of 200°C and 400°C.
- Ternary blended steel fibre reinforced concrete with the combination of (FA+MK) show higher resistance to sustained elevated temperature of 200°C or 400°C as compared to the combination of (FA+SF) and (FA+GGBFS).
- Ternary blended steel fibre reinforced concrete with the combination of (FA+SF) when subjected to sustained elevated temperature 600°C and 800°C show poor performance.
- Thus it is concluded that the ternary blended steel fibre reinforced concrete with the combination of (FA+GGBFS) when subjected to sustained elevated temperature of 600°C shows better performance.
- Ternary blended steel fibre reinforced concrete with the combination of (FA+GGBFS) shows higher resistance to sustained elevated temperature of 600°C and 800°C as compared to the combinations of (FA+SF) and (FA+MK).
- Ternary blended steel fibre reinforced concrete with the combination of (FA+GGBFS) is susceptible to a little extent to sustained elevated temperature of 1000°C where as the combination of (FA+SF) and (FA+MK) show very poor performance at 1000°C.
- Thus FA, SF, GGBFS and MK which are industrial wastes can be recommended in the production of concrete/SFRC to be used for structures which are required to sustain high temperature which in turn help in reducing the global warming.