Table 4: Spilt tensile strength of partial replacement of fly ash

Age (days)	M_1	M_2 Replacement (%)		
		10	20	30
7	1.27	0.5	1.22	1.19
28	2.45	1.57	2.41	2.35

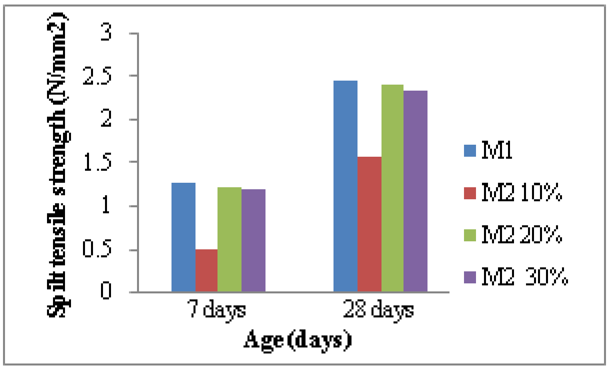

Figure 2: Spilt tensile strength of M_1 & M_2

The above graph, represent the 20% replacement of fly ash by weight of cement is optimized

Table 5: Compressive strength of M_1 + M_3

Age (days)	M_1	M_3
7	19.56	24.85
28	27.65	32.57

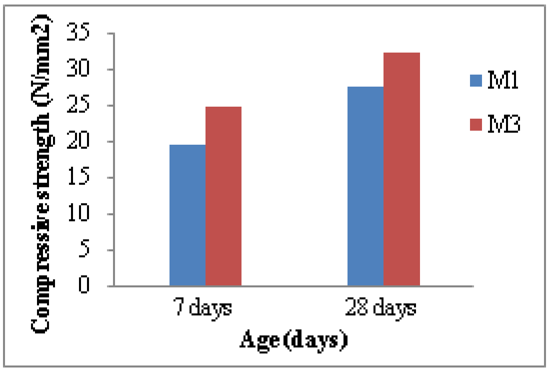

Figure 3: Compressive strength of M_1 + M_3

Table 5: Spilt tensile strength of M_1 + M_3

Age (days)	M_1	M_3
7	1.27	3.19
28	2.45	4.5

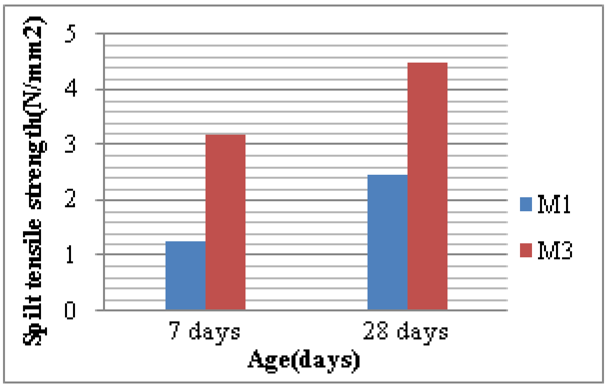

Figure 4: Spilt tensile strength of M_1+ M_3

Table 6: Compressive strength of M_1 + M_4

Age (days)	M_1	M_4
7	19.56	15.92
28	27.65	22.49

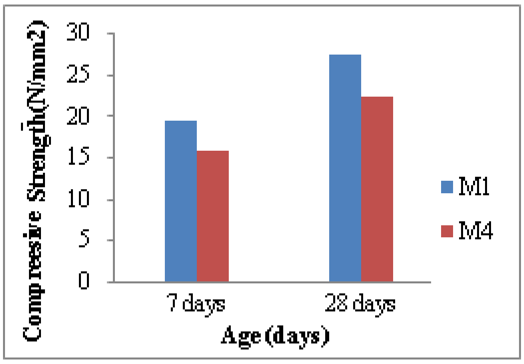

Figure 5: Compressive strength of M_1 + M_4

Table 7: Spilt tensile strength of M_1+ M_4

Age (days)	M_1	M_4
7	1.27	1.09
28	2.45	1.94

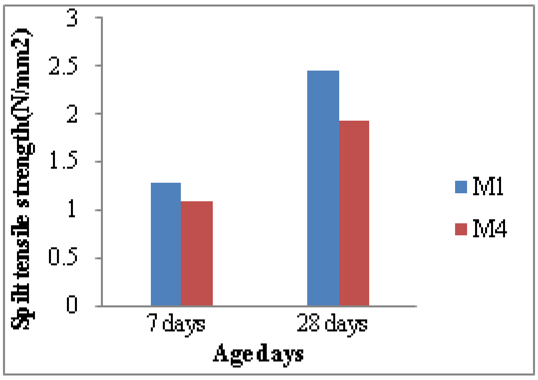

Figure 6: Spilt tensile strength of M_1+ M_4

Table 8: Densities of concrete

Density	M_1 (kg/m^3)	Replacement of M_2 (%) (kg/m^3)			M_3 (kg/m^3)	M_4 (kg/m^3)
		10	20	30		
Cube	2962	3022	3111	3170	3117	2518
Cylinder	2735	2697	2700	2740	2546	2170

5. Conclusion

In this study, the density and strength characteristics of concrete by volume replacement of cement by 10%, 20%, 30% fly ash, fully replacement of sand by quarry dust and 25% replacement of coarse aggregate with coconut shells were investigated. It was concluded that,

- Compared the density of concrete was decreases with M_4 than M_1, increases with M_2,M_3 than M_1
- Compared the compressive strength of concrete was decreases with M_4 than M_1, increases with M_2,M_3 than M_1
- Compared the Spilt tensile strength of concrete was decreases with M_4 than M_1, increases with M_2, M_3 than M_1.

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