

# Contents

<b>CANDIDATE’S DECLARATION .....</b>	<b>ii</b>
<b>ACKNOWLEDGEMENT .....</b>	<b>iii</b>
<b>CONTENTS .....</b>	<b>iv</b>
<b>LIST OF FIGURES.....</b>	<b>vii</b>
<b>LIST OF TABLES .....</b>	<b>ix</b>
<b>ABSTRACT .....</b>	<b>1</b>
<b>1. INTRODUCTION .....</b>	<b>2</b>
1.1          Basic Introduction.....	2
1.2          Objectives of Study.....	4
1.3          Advantages and Dis-Advantages .....	4
1.4          Selection of Topic .....	6
1.5          Scope.....	6
<b>2. LITERATURE REVIEW... ..</b>	<b>7</b>
<b>3. METHODOLOGY .....</b>	<b>11</b>
3.1          Introduction.....	11
3.2          Material used and their Properties.....	11
3.3          Cement .....	11
3.3.1      Physical Requirement for OPC (Grade-43).....	12
3.3.2      Chemical Composition of OPC (Grade-43).....	13

3.4	Sand	.....14
3.4.1	Physical property of Sand	. ....15
3.5	Ground Nut Shell Ash	...15
3.6	Sisal Fibers	....16
3.7	Aggregate	....17
<b>4</b>	<b>Experimental Study .....</b>	<b>19</b>
4.1	Grading OF fine Aggregate	.....19
4.2	Grading OF CA (20mm)	.....20
4.3	Grading of CA (10mm)	.....21
4.4	Specific Gravity of Sisal fiber	.....22
4.5	Slump test	.....22
4.6	Compressive Strength	.....24
4.7	Split Tensile Strength	.....25
4.8	Flexure Strength	.....26
<b>5</b>	<b>RESULTS AND DISCUSSIONS .....</b>	<b>28</b>
5.1	Workability of concrete	.....28
5.2	Compressive Strength	.....29
5.3	Split Tensile Strength Of Concrete	.....32
5.4	Flexure Strength of Concrete	.....35
5.5	Durability of Concrete	.....38
<b>6</b>	<b>CONCLUSION AND FUTURE SCOPE .....</b>	<b>46</b>
6.1	General Experimental Result	.....46
6.2	Future Scope	.....52
<b>7</b>	<b>REFERENCES .....</b>	<b>53</b>
	<b>APPENDIX.....</b>	<b>55</b>

## LIST OF FIGURES

S. No.	Figure No.	Description	Pg. No.
1	Fig. 3.1.	Cement (OPC)	12
2	Fig. 3.2	Fine aggregates (sand)	14
3	Fig. 3.3	Ground Nut Shell Ash	16
4	Fig. 3.4	Sisal fibers	17
5	Fig. 3.5	20 mm and 10mm aggregate	18
6	Fig. 4.1	Slump test	24
7	Fig. 4.2	Compressive Strength of concrete	25
8	Fig. 4.3	Split Tensile Strength	26
9	Fig. 4.4	Flexure Strength Test	27
10	Fig. 5.2	Comparative Compressive Strength of M30 Grade	31
11	Fig. 5.4	Comparative Splitting Tensile Strength of M30 Grade	34
12	Fig. 5.6	Comparative Flexural Strength of M30 Grade	
13	Fig. 5.9	Comparative analysis of loss in moisture of M30 Grade <b>(Resistance against Acid Attack)</b>	43
14	Fig. 5.10	Comparative analysis of loss in moisture of M30Grade <b>(Resistance against Alkali attack)</b>	45

## LIST OF TABLES

S. No.	Table No.	Description	Pg. No.
1	TABLE 3.1	PHYSICAL PROPERTY OF OPC	12
2	TABLE 3.2	CHEMICAL COMPOSITION OF OPC	13
3	TABLE 3.3	PROPERTIES OF SAND	15
4	TABLE 3.4	CHEMICAL PROPERTIES OF CCA	16
5	TABLE 4.1	SIEVE ANALYSIS OF FINE AGGREGATE	19
6	TABLE 4.2	SIEVE ANALYSIS OF COARSE AGGREGATE	20
7	TABLE 4.3	SIEVE ANALYSIS OF COARSE AGGREGATE(10MM)	21
8	TABLE 4.4	PROPERTIES OF SISAL FIBER	22
9	TABLE 5.1	SLUMP FOR CONTROL MIX OF M30 GRADE	28
10	TABLE 5.2	SLUMP WITH 15% CCA & SISAL FIBER	28
12	TABLE 5.4	COMPRESSIVE STRENGTH OF M30 GRADE	31
14	TABLE 5.6	SPLITTING TENSILE STRENGTH OF M30 GRADE	34
16	TABLE 5.8	FLEXURAL STRENGTH OF M30 GRADE	37
19	TABLE 5.11	RESISTANCE AGAINST ACID ATTACK OF M30 GRADE	42
20	TABLE 5.13	RESISTANCE AGAINST ALKALI ATTACK OF M30 GRADE	44