## CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>TITLE</th>
<th>PAGE No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DECLARATION</td>
<td>i</td>
<td></td>
</tr>
<tr>
<td>CERTIFICATE</td>
<td>ii</td>
<td></td>
</tr>
<tr>
<td>ACKNOWLEDGEMENT</td>
<td>iii</td>
<td></td>
</tr>
<tr>
<td>CONTENTS</td>
<td>iv - viii</td>
<td></td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>ix-xvi</td>
<td></td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xvii</td>
<td></td>
</tr>
<tr>
<td>LIST OF GRAPHS</td>
<td>xviii-xix</td>
<td></td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1 - 110</td>
<td></td>
</tr>
<tr>
<td>SECTION I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nature of science</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Evolution of science in India during ancient medieval and modern period</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Historical background of science</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Contribution of scientists</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Science and education</td>
<td>10 - 16</td>
<td></td>
</tr>
<tr>
<td>Problem solving and scientific reasoning</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Steps of Scientific method</td>
<td>18 - 21</td>
<td></td>
</tr>
<tr>
<td>Misconceptions</td>
<td>21 – 22</td>
<td></td>
</tr>
<tr>
<td>Common misconceptions in Physics</td>
<td>22 – 25</td>
<td></td>
</tr>
<tr>
<td>The Learning Cycle</td>
<td>25 – 26</td>
<td></td>
</tr>
<tr>
<td>Critical Thinking and Critical thinking skills</td>
<td>26 – 44</td>
<td></td>
</tr>
<tr>
<td>Topic</td>
<td>Pages</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td>Role of Critical thinking in education and life</td>
<td>44 – 52</td>
<td></td>
</tr>
<tr>
<td>Characteristics of Critical thinker</td>
<td>52 – 53</td>
<td></td>
</tr>
<tr>
<td>Relationship of Critical thinking to Scientific method</td>
<td>53 – 55</td>
<td></td>
</tr>
<tr>
<td>Critical thinking Programs</td>
<td>55 – 68</td>
<td></td>
</tr>
<tr>
<td>Dimensions of Critical thoughts</td>
<td>69 - 96</td>
<td></td>
</tr>
<tr>
<td>Discovering parts of thinking</td>
<td>96 – 98</td>
<td></td>
</tr>
<tr>
<td>The advantages of Critical thinking</td>
<td>98 - 101</td>
<td></td>
</tr>
</tbody>
</table>

**SECTION II**

**ABOUT THE RESEARCH**

- Statement of the problem                                           102
- Operational definitions of terms used in the statement of the problem 102 – 105
- Objectives of the study                                            105
- Assumptions                                                         105 - 106
- Null Hypotheses                                                    106 -108
- Delimitations of the study                                         108
- Scope of the study                                                 108
- Significance of the research                                       109 – 110
<table>
<thead>
<tr>
<th>II</th>
<th>REVIEW OF RELATED LITERATURE AND RESEARCH</th>
<th>111 – 248</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Introduction</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>Objectives of related literature and researches</td>
<td>112 – 116</td>
</tr>
<tr>
<td></td>
<td>Importance of related literature and researches</td>
<td>116 – 119</td>
</tr>
<tr>
<td></td>
<td>Review of Literature related to study</td>
<td>119 – 174</td>
</tr>
<tr>
<td></td>
<td>Review of research studies conducted in India</td>
<td>174 – 210</td>
</tr>
<tr>
<td></td>
<td>Review of Studies conducted on misconceptions in Science in abroad</td>
<td>210 – 248</td>
</tr>
<tr>
<td></td>
<td>CONCLUSION</td>
<td>248</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>III</th>
<th>PLAN AND PROCEDURE</th>
<th>249 – 278</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Meaning of Research</td>
<td>249</td>
</tr>
<tr>
<td></td>
<td>Educational Research</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>Research Methodology</td>
<td>250 - 251</td>
</tr>
<tr>
<td></td>
<td>Experimental Research</td>
<td>251 – 252</td>
</tr>
<tr>
<td></td>
<td>Experimental Design</td>
<td>253 – 256</td>
</tr>
<tr>
<td></td>
<td>Tools of Research</td>
<td>256 – 264</td>
</tr>
<tr>
<td></td>
<td>Remedial Program</td>
<td>265 – 268</td>
</tr>
<tr>
<td></td>
<td>Sampling and Sampling Design</td>
<td>269 – 274</td>
</tr>
<tr>
<td></td>
<td>Data Collection</td>
<td>275 – 277</td>
</tr>
<tr>
<td></td>
<td>Statistics used for analysis</td>
<td>278</td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>IV</td>
<td>ANALYSIS AND INTERPRETATION OF DATA</td>
<td>279 – 377</td>
</tr>
<tr>
<td></td>
<td>Introduction</td>
<td>279</td>
</tr>
<tr>
<td></td>
<td>Analysis and interpretation of data</td>
<td>280 – 365</td>
</tr>
<tr>
<td></td>
<td>Results</td>
<td>366 - 377</td>
</tr>
<tr>
<td>V</td>
<td>SUMMARY AND CONCLUSION</td>
<td>378 – 405</td>
</tr>
<tr>
<td></td>
<td>Introduction</td>
<td>378 – 385</td>
</tr>
<tr>
<td></td>
<td>Statement of the problem</td>
<td>386</td>
</tr>
<tr>
<td></td>
<td>Definitions of the terms used in the statement of the problem</td>
<td>386 – 389</td>
</tr>
<tr>
<td></td>
<td>Objectives of the study</td>
<td>389</td>
</tr>
<tr>
<td></td>
<td>Assumptions</td>
<td>389 - 390</td>
</tr>
<tr>
<td></td>
<td>Null hypotheses</td>
<td>390 – 392</td>
</tr>
<tr>
<td></td>
<td>Delimitations of the study</td>
<td>392</td>
</tr>
<tr>
<td></td>
<td>Scope of the study</td>
<td>392</td>
</tr>
<tr>
<td></td>
<td>Significance of the study</td>
<td>393 – 394</td>
</tr>
<tr>
<td></td>
<td>Plan and Procedure</td>
<td>394 – 402</td>
</tr>
<tr>
<td></td>
<td>Experimental design</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sampling design</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tools for research</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data Collection</td>
<td></td>
</tr>
<tr>
<td>Section</td>
<td>Pages</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>Conclusions</td>
<td>403</td>
<td></td>
</tr>
<tr>
<td>Recommendations</td>
<td>404</td>
<td></td>
</tr>
<tr>
<td>Suggestions for further research</td>
<td>405</td>
<td></td>
</tr>
<tr>
<td>REFERENCES</td>
<td>406 – 432</td>
<td></td>
</tr>
<tr>
<td>APPENDICES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A) Diagnostic Test</td>
<td>433 – 436</td>
<td></td>
</tr>
<tr>
<td>B) Critical thinking Test</td>
<td>437 – 443</td>
<td></td>
</tr>
<tr>
<td>C) List of Students</td>
<td>444 – 457</td>
<td></td>
</tr>
<tr>
<td>D) Remedial Program</td>
<td>458 – 478</td>
<td></td>
</tr>
<tr>
<td>E) Letter from Guide</td>
<td>479</td>
<td></td>
</tr>
<tr>
<td>experts and institutions</td>
<td>480 – 480</td>
<td></td>
</tr>
</tbody>
</table>