CHAPTER-V
ANALYSIS AND INTERPRETATION OF DATA

In the proceeding chapters, the problem of the study, theoretical construct of the variables involved, review of related studies and hypotheses, methods and procedures used for the study were discussed. The present chapter has been designed to report the results of the study.

This chapter has been divided into three sections

Section I: deals with the nature of co-relation of the Independent variable of intelligence, emotional intelligence, creativity, problem solving ability, study habit and home environment with the dependent variable of academic achievement in Biology.

Section II: deals with the differences in the achievement of students in Biology due to level of intelligence, emotional intelligence, problem solving ability, creativity, study habit and home environment.

Section III: deals with step up regression equations to find the contribution of dependent and independent variable on the achievement in Biology.

SECTION – I

Co-efficient of Correlation

Bivariate co-relation is statistical technique which is used to measure the relationship between two variables in order to predict the relationship between two variables and to evaluate the degree of reliability of psychological tests. Product moment co-efficient of correlation of the dependent variable of achievement in Biology with each of independent variables of achievement in Biology, that is with
Analysis and Interpretation of Data…

each of independent variables of general mental ability, emotional intelligence, problem solving ability, study habits measures of home environment, measures of creativity work was found with the help of computer to know the degree of relationship between these variables in order to test the following hypotheses which had already been given in chapter – III and are reproduced below for ready reference

1. (a) There exists positive and significant relationship between academic achievement in Biology and intelligence.

   (b) There exists positive and significant relationship between academic achievement in Biology and emotional intelligence.

   (c) There exists positive and significant relationship between academic achievement in Biology and creativity.

   (d) There exists positive and significant relationship between academic achievement in Biology and problem solving ability.

2. (a) There exists positive and significant relationship between academic achievement in Biology and study habits.

   (b) There exists positive and significant relationship between academic achievement in Biology and family environment.

   The values of coefficient of correlation between dependent variable of achievement of Biology and different independent variables have been given in Table 5.1 and 5.2.
5.1 GENERAL MENTAL ABILITY AND ACHIEVEMENT IN BIOLOGY

Variable of intelligence, measure through general mental ability, was found to be significantly and positively correlated with the achievement in Biology at .01 levels. In other words, adolescent with high mental ability, that is, high intelligence and studying in senior secondary stage will have high level of achievement in Biology.

The reasons for the above results may be that the tasks involved in the General Mental Ability test and Achievement test in Biology may be the same.

Therefore hypothesis 1 (a) that there exists positive and significant relationship between academic achievement in Biology and intelligence in the present study was accepted in the present study.

Results of the present study were similar to the results of Passi (1972), Meena (1999), Kumar (1994) and Bajwa (1998)

5.2 EMOTIONAL INTELLIGENCE AND ACHIEVEMENT IN BIOLOGY

Correlation between the variables of emotional intelligence and achievement in Biology was found to be positive and significant at .01 level. In other words both the above variables were found to dependent on each other.

Result of the present study may be explained on the basis of common ability in both the tests and thus adolescents with high emotional Intelligence will be high in achievement in Biology.
Thus hypothesis 1 (b) that there exists positive and significant relationship between academic achievement in Biology and emotional intelligence was accepted.

Above results of the present study were in line with the results of Ohm (1998), Mount (2000), and Manhans (2004).

5.3 CREATIVITY AND ACHIEVEMENT IN BIOLOGY

Measures of fluency (x) was found to be significantly correlated with the dependent variable of achievement in Biology (r = .225, vide table 5.1). In other words, students whose fluency ability was high were found to be high on achievement in Biology.

Variable of flexibility (F) was found to be significantly and positively correlated with the dependent variable of achievement in Biology at .01 level (r = .230 vide table 5.1). Thus students high on measures of flexibility were also high on achievement in Biology.

Measures of originality (O) was also found to be positively correlated with the dependent variable of achievement in Biology and correlation is significant at .01 level (r = .169, vide table 5.1). Thus as per the results of present study, student with high level of originality were found to be high in their achievement in the subject of Biology.

Reasons for the above mentioned result may be that in Solving the Test of Achievement in Biology, some sort of fluency, flexibility and originality is definitely involved.

Therefore the hypothesis 1 (c) that there exists positive and significant relationship between academic achievement in Biology and creativity was also retained in the present study.
Above results were in line with the results of Passi (1971), Yadav (1985) and Parsad (2002).

5.4 PROBLEM SOLVING ABILITY AND ACHIEVEMENT IN BIOLOGY

As per the results of present study significant positive correlation was obtained between the variable of problem solving ability and achievement in Biology at .01 level (r = .200 vide table 5.1). In other words adolescents with high problem solving ability were found to be high on achievement in Biology.

Significant positive correlation between the problem solving ability and achievement in Biology may be due to the fact that in Achievement Test in Biology, definitely some problem solving ability is involved.

Therefore hypothesis 1 (d) that there exists positive and significant relationship between academic achievement in Biology and problem solving ability was retained.

Above results of the present study were in line with the results of Rajnish (1998) and Parkash (2000).

5.5 STUDY HABITS AND ACHIEVEMENT IN BIOLOGY

Study habits of the students were found to be significantly positively correlated with the achievement in Biology at .05 level (r = .103 vide table 5.1). Thus as per the results of the present study, students with good study habits were also good on achievement in Biology.
Analysis and Interpretation of Data…

Reasons for the above mention results may be that Biology is a science subject and only those student can excel in this subject who are having good study habits.

Therefore hypothesis 2 (a) that there exists positive and significant relationship between academic achievement in Biology and study habits was accepted.

Above results of present study were similar to the result of Jamaur (1958), Bala (1990) and Dinesh (2003).

5.6 HOME ENVIRONMENT AND ACHIEVEMENT IN BIOLOGY

There are following 10 dimensions of the Home Environment Inventory:
1. Control.
2. Protectiveness.
3. Punishment
4. Conformity
5. Social Isolation
6. Reward
7. Deprivation of Privileges.
8. Nurturance
9. Rejection
10. Permissiveness

As per the result of the present study, significant positive correlation were obtained between the six measures of Home Environment (Protectiveness, Conformity, Social Isolation, Rewards, Deprivation of Privileges and Rejection) and student achievement in
Biology due to significant positive correlation ($r = .124, .176, .100, .278, .201$ and $.146$ respectively).

In other words, it was found that if in the family, adolescents are protected, kept in observation, living in social isolation, rewarded, and are nurtured very well, then their achievement in the subject of Biology will be higher.

Above results may be explained on the ground that if adolescents are protected by the parents and they are kept away from social gathering which destruct their study and are given good nurturance and rewards then these factors will definitely lead to the higher achievement in the subject of Biology.

Thus hypothesis 2 (b) that there exists positive and significant relationship between academic achievement in Biology and family environment was accepted.

Above result were in line with the results of Dwivedi and Sharma (1987), Nirmala (1992) and Gaur (2005)
<table>
<thead>
<tr>
<th></th>
<th>Intelligence</th>
<th>Emotional Intelligence</th>
<th>Problem Solving Ability</th>
<th>Creativity</th>
<th>Study Habits</th>
<th>Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intelligence</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional Intelligence</td>
<td>.238**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem Solving Ability</td>
<td>.360**</td>
<td>.098*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creativity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>.231**</td>
<td>.057</td>
<td>.056</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>.243**</td>
<td>.080</td>
<td>.068</td>
<td>.786**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>.098*</td>
<td>.083</td>
<td>.003</td>
<td>.341**</td>
<td>.273**</td>
<td>1.00</td>
</tr>
<tr>
<td>Total</td>
<td>.257**</td>
<td>.046</td>
<td>.077</td>
<td>.829**</td>
<td>.800**</td>
<td>.407**</td>
</tr>
<tr>
<td>Study Habit</td>
<td>.116*</td>
<td>.068</td>
<td>.043</td>
<td>.033</td>
<td>.003</td>
<td>.080</td>
</tr>
<tr>
<td>Achievement</td>
<td>.553**</td>
<td>.126**</td>
<td>.200**</td>
<td>.225**</td>
<td>.230**</td>
<td>.169**</td>
</tr>
</tbody>
</table>

*Significant at .05 level
**Significant at .01 level
### Table 5.2

Table showing values of coefficient of correlation between dependent variable of achievement in Biology and measures of Home environment.

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
<th>f</th>
<th>g</th>
<th>h</th>
<th>i</th>
<th>j</th>
<th>Total</th>
<th>Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b</td>
<td></td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>.23</td>
<td></td>
<td>.175</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d</td>
<td></td>
<td>.173</td>
<td></td>
<td>.334</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e</td>
<td>.22</td>
<td></td>
<td></td>
<td></td>
<td>.139</td>
<td></td>
<td>.140</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f</td>
<td></td>
<td>.06</td>
<td></td>
<td></td>
<td></td>
<td>.098</td>
<td></td>
<td>.324</td>
<td></td>
<td>.074</td>
<td></td>
<td>.061</td>
</tr>
<tr>
<td>g</td>
<td>.17</td>
<td></td>
<td>.112</td>
<td></td>
<td></td>
<td>.92</td>
<td></td>
<td>.346</td>
<td></td>
<td>.269</td>
<td></td>
<td>1.00</td>
</tr>
<tr>
<td>h</td>
<td>.21</td>
<td></td>
<td>.271</td>
<td></td>
<td>.013</td>
<td>.082</td>
<td></td>
<td>.175</td>
<td></td>
<td>.298</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i</td>
<td></td>
<td>.19</td>
<td></td>
<td></td>
<td>.052</td>
<td></td>
<td>.028</td>
<td></td>
<td>.370</td>
<td></td>
<td>.395</td>
<td></td>
</tr>
<tr>
<td>j</td>
<td>.02</td>
<td></td>
<td></td>
<td></td>
<td>.053</td>
<td></td>
<td>.298</td>
<td></td>
<td>.021</td>
<td></td>
<td>.056</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>.49</td>
<td></td>
<td>.406</td>
<td></td>
<td>.065</td>
<td></td>
<td>.287</td>
<td></td>
<td>.449</td>
<td></td>
<td>.334</td>
<td></td>
</tr>
<tr>
<td>Achievement</td>
<td>.07</td>
<td></td>
<td>.124</td>
<td></td>
<td>.065</td>
<td></td>
<td>.176</td>
<td></td>
<td>.100</td>
<td></td>
<td>.278</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at .05 level

**Significant at .01 level
SECTION II

Step up Regression Equations

Kerlinger and Pedhazur (1973) remarked that “Multiple regression analysis is a method of analyzing the collective and separate contribution of 2 or more than 2 variables, ‘x’ to the variation of dependent variable ‘y’. Further step up regression equations were set up by adding on independent variable to the previous one at a time with the criterion variable of emotional maturity separately and examined for their efficiency in predicting emotional maturity of adolescents. $R^2$, the square of multiple correlations, called the coefficient of determination shows the proportion of variance of criterion variable accounted for by different predictors. The step up regression analysis helps to know the most relevant variable, which accounts for the maximum variance for the criterion variable from the total set of independent variables. Therefore of all the independent variables which were proved to be correlated with dependent variables, emotional maturity was taken as a set of predictor variables in different combinations taken one at a time and emotional maturity as criterion variable. Also, to find the significance of difference between the values of R’s (Multiple correlations) from one specific correlation of independent variable to subsequent combination of variables, explaining the stepping of an additional variable to the previous set, F- ratio’s were worked out.

The technique for multiple correlation and step up regression equations were applied for testing hypothesis No. 3 which is given below for ready reference.
Hypothesis 3: The increase in the prediction value after step up addition of each variable of intelligence, emotional intelligence, creativity, problem solving ability, study habits and home environment would be significant towards the prediction of academic achievement in Biology.

Variables and symbols used in all the regression equation have been shown in table 5.3.

Table 5.3
Table showing variables symbols as entered in the regression equation.

<table>
<thead>
<tr>
<th>Variables Name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement in Biology</td>
<td>Y</td>
</tr>
<tr>
<td>Intelligence</td>
<td>x₁</td>
</tr>
<tr>
<td>Creativity</td>
<td>x₂</td>
</tr>
</tbody>
</table>

The results of rs, multiple R, multiple regression equations, R², F-ratio’s for the predictors have been given in tables 5.4 and 5.5.

Table 5.4
Table showing values of r, R, R² and F between dependent variable achievement in Biology and independent variable of General mental ability

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Regression equations</th>
<th>R</th>
<th>R²</th>
<th>SE</th>
<th>df</th>
<th>F</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intelligence General Mental Ability)</td>
<td>Y = 15.47 + .553 x₁</td>
<td>.553</td>
<td>.306</td>
<td>6.73</td>
<td>.513</td>
<td>225.79**</td>
<td>.553</td>
</tr>
</tbody>
</table>

** significant at .01 level
5.7 MODEL – I

This Model was designed to know how much variance towards the criterion variable of achievement in Biology was accounted for by the independent variable of General Mental Ability. Value of $R^2$ was found to be .306 which explained that independent variable of General Mental Ability contributed 30.60% Variance in productivity of the criterion variable of achievement in Biology. In other words, 30.60% of individual difference in the achievement in Biology of students of present sample can be attributed to the General Mental Ability of the students. On the basis of significant F values ($F = 225.79$) the variable of General Mental Ability was found to be a good predictor of achievement in Biology.

Above results were also supported by the value of $r$ between the dependent variable of achievement in Biology and independent variable of General Mental Ability which was found to be significant at .01 level ($r = .553$).

**TABLE 5.5**

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Regression equations</th>
<th>$R$</th>
<th>$R^2$</th>
<th>SE</th>
<th>df</th>
<th>$F$</th>
<th>$r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intelligence + Creativity</td>
<td>$Y = 14.128 + .523 x_1 + .117 x_2$</td>
<td>.564</td>
<td>.318</td>
<td>6.67</td>
<td>512</td>
<td>119.54**</td>
<td>.251</td>
</tr>
</tbody>
</table>

**significant at .01 level**
5.8 MODEL - II

Model II was set up by stepping up the variable of creativity in the previous model. With the addition of this variable, values of R and R² were increased from .553 to .564 and .306 to .318 respectively. In other words, with the addition of independent variable of creativity there was 1.20% increase in the variance. In other words, 1.20% variance was contributed by the variable of creativity in predicting the achievement of student in Biology. As F value (F = 119.54) was found to be significant at .01 level, therefore the variable of creativity was also found to be a good predictor in predicting the achievement of student in Biology.

On the basis of above results. It may be concluded that out of six variables, that is, intelligence, emotional intelligence, problem solving ability, creativity, study habits and home environment only two independent variables, i.e. intelligence or general mental ability and creativity were found to be the good predictors in predicting the achievement of students in Biology.

Thus hypothesis 3 that the increase in the prediction value after step up addition of each variable of intelligence, emotional intelligence, creativity, problem solving ability, study habits and home environment would be significant towards the prediction of academic achievement in Biology was partially accepted in the present study.

SECTION-III

t-ratios

In this section statistical technique of t-ratios has been employed in order to see whether a true difference exists between the population means of two samples (i.e. low and high general mental ability, emotion intelligence, problem solving ability, verbal creativity,
also good study habits and poor study habits as well as poor and rich home environment) and then to find if the difference between means is large enough to be taken as real. Then from the difference between the sample means and its standard error, it can be found whether the difference exists between the population means. Thus the t-ratios is the simple solution to the problem of using the sample means of two samples and their standard deviation. For the sake of convenience, the researchers generally take 0.05 and 0.01 as the level of significance as two arbitrary standards for accepting or rejecting the hypothesis.

Statistical technique of t-ratio was employed to test the following hypotheses

4 (a) There would be significant difference in the achievement in Biology due to high and low level of Intelligence.

(b) There would be significant difference in the achievement in Biology due to high and low level of emotional intelligence.

(c) There would be significant difference in the achievement in Biology due to high and low level of creativity.

(d) There would be significant difference in the achievement in Biology due to high and low level of problem solving ability.

(e) There would be significant difference in the achievement in Biology due to high and low scores on study habits inventory.

(f) There would be significant difference in the achievement in Biology due to rich and poor family environment.
The values of mean SD, and t-ratio have been given in table from 5.6 to 5.11

**Table 5.6**

Table showing value of mean, SD and t-ratio to locate difference in the achievement of students in Biology due to low and high General mental ability.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>df</th>
<th>t-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intelligence (General Mental ability)</td>
<td>Low</td>
<td>81</td>
<td>24.33</td>
<td>6.96</td>
<td>166</td>
<td>12.02**</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>87</td>
<td>36.37</td>
<td>6.33</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** Significant at .01 level.

From the result of table 5.6, it was observed that significant difference exists in the achievement of students in the subject of Biology due to the low and high level of general mental ability as t-ratio was found to be significant at .01 level (t = 12.02). In other words, students of low and high mental ability differed significantly from each other in achievement in Biology. After comparing the means scores of two groups, it was found that mean scores of achievement in Biology of high general mental ability was higher (mean = 36.67) as compared to low general mental ability group (mean = 24.33).

Reasons for the above results may be that in both the situations i.e. general mental ability and achievement in Biology, convergent thinking is involved and that is why the above difference was found in the two groups of general mental ability students.
Analysis and Interpretation of Data…

Therefore Hypothesis 4(a) that there would be significant difference in the achievement in Biology due to high and low level of Intelligence was accepted here.

Results of the present study were in line with the results of Mohan (1975), Kumar (1994) and Mishra (1997).

Table 5.7
Table showing the values of mean, SD and t-ratio to locate the difference in the achievement of student in the subject of Biology due to low and high emotional intelligence

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>df</th>
<th>t-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional Intelligence</td>
<td>Low</td>
<td>79</td>
<td>58.86</td>
<td>8.25</td>
<td>152</td>
<td>3.53**</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>75</td>
<td>33.54</td>
<td>8.17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**significant at .01 level.

Results of table 5.7 clearly indicated significant difference in the achievement of students in the subject of Biology due to low and high emotional intelligence as t-ratio was found to be significant at .01 level of significance. (t = 3.53). Thus students high on emotional intelligence secured higher in the subject of Biology as compared to their counterparts when their mean scores were compared. Students high on emotional intelligence got higher mean score (mean = 33.54) as compared to students with low emotional intelligence (mean = 28.86).

The Reasons for the above result may be that in emotional intelligence, factors like self awareness, self motivations, emotional
stability and commitment are involved which help the students in securing higher in the subject of Biology.

Thus hypothesis 4 (b) that there would be significant difference in the achievement in Biology due to high and low level of emotional intelligence was accepted here.

Above results were in line with Tapia (1998), Miglani (2001) Lekhi (2005).

Table 5.8

| Table showing the values of mean, SD and t-ratio to locate difference in the achievement of students in Biology due to low and high verbal creativity |
|---|---|---|---|---|---|
| Variable | Group | N  | Mean | SD  | df  | t-ratio |
| Verbal Creativity | Low  | 78  | 29.15 | 8.31 | 157  | 5.56** |
| Verbal Creativity | High | 81  | 35.59 | 6.15 |

**significant at .01 level.

Results of the present study as presented in table 5.8 showed significant difference in the achievement of students in the subject of Biology due to low and high verbal creativity due to significant t-value at .01 level. (t = 5.56). Also when mean scores were compared it was found that students high on verbal creativity secured (mean = 35.59) higher on achievement test as compared to their counterparts. (Mean 29.15)

Reasons for the above results may be that in the achievement test in Biology some items were of divergent thinking and that is why students high on creativity secured higher as compare to the students low on the creativity.
Therefore the hypothesis 4(c) that there would be significant difference in the achievement in Biology due to high and low level of creativity was retained here.

Above results of present study resembled with the results of Gakhar (1985) and Kaur (1992)

**Table 5.9**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>df</th>
<th>t-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Solving Ability</td>
<td>Low</td>
<td>40</td>
<td>28.35</td>
<td>7.77</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>84</td>
<td>34.17</td>
<td>8.16</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

**Significant at .01 level.**

As for the result of table 5.9 it was observed that significant difference exists in the low and high problem solving ability group of students on the variable of achievement in Biology due to significant t-value at .01 level (t=3.77). When these mean scores were compared it was that student with high problem solving ability secure higher mean scores (mean = 34.17) as compared to student with low problem solving ability (mean = 28.35).

Above results may be explained on the ground that in the test of problem solving ability and achievement test in Biology, some sort of problem situations were given to the students and hence the present results. Put in other way, students with high problem solving ability
should have done better on the achievement test as compared to their counterparts.

Therefore the hypothesis 4(d) that there would be significant difference in the achievement in Biology due to high and low level of problem solving ability was accepted here.

Das (1978), Sodhi and Gill (1996) and Sood (1999) also obtained the similar results.

Table 5.10

Table showing the value of mean, SD and t-ratio to locate difference in the achievement of students in Biology due to poor and Good study habits.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>df</th>
<th>t-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study Habits</td>
<td>Poor</td>
<td>77</td>
<td>29.88</td>
<td>7.34</td>
<td>158</td>
<td>2.33**</td>
</tr>
<tr>
<td></td>
<td>Good</td>
<td>83</td>
<td>32.79</td>
<td>8.47</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**significant at .01 level

From the result of table 5.10 it was noticed that significant difference exist in the achievement of students in Biology due to poor and Good study habits as t-value was found to be significant at .01 level (t = 2.33). Also when mean scores on the variable of achievement in Biology were compared, it was found that students with good study habits secured higher on achievement test (mean = 32.79) as compared to the students with poor study habits (mean = 29.88).

Reasons for the above results may be that good study habits like comprehension, concentration, drilling and recording play important
role in the achievement of students and that is true in case of subject of Biology also.

Therefore hypothesis 4(e) that there would be significant difference in the achievement in Biology due to high and low scores on study habits was also accepted here.

Above result were not similar to the results of Nirmal Kanta (1979), Gelat (1999) and Dinesh (2003).

**Table 5.11**

Table showing the value of mean SD and t-ratio to find the difference in the achievement of students in Biology due to Poor and Rich Home Environment

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>df</th>
<th>t-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home</td>
<td>Poor</td>
<td>55</td>
<td>31.80</td>
<td>6.82</td>
<td>103</td>
<td>3.72**</td>
</tr>
<tr>
<td>Environment</td>
<td>Rich</td>
<td>50</td>
<td>36.80</td>
<td>7.26</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**significant at .01 level**

Result of table 5.11 showed significant difference in the achievement of students in Biology due to poor and rich home environment as t-ratio was significant at .01 level. \( t = 3.72 \). From their mean scores, it was found that those students who lived in rich environment secured higher in the subject of Biology (mean = 36.30) as compared to the students who lived in poor home environment (mean = 31.80)

Probably the reasons for the above results may be that in rich family environment the students get all the facilities and support from
Analysis and Interpretation of Data...

the family members which is not possible in the poor family environment.

Therefore hypothesis 4(f) that there would be significant difference in the achievement in Biology due to rich and poor family environment was also accepted in present study.

Above results were similar to the results of Nirmala (1992) Rani (2003) and Gaur (2005).