

Laxmi Charitable Trust's
Sheth L.U.J College of Arts & Sir M.V. College of Science and Commerce
Department of Information Technology (B.Sc.I.T Semester IV)
Data Analysis With SPSS/SAS/R

Practical – VII

Roll No.: S044	Name: Omkar Thukarul
Class: SYIT	Batch: 1
Date of Assignment: 17/01/2026	Date/Time of Submission: 17/01/2026

7 Performing one-way ANOVA using aov() (R).

Code:

```

student_data <- read.csv("Exam_Score_Prediction.csv")
# Convert to factor
student_data$study_method <- as.factor(student_data$study_method)

# One-way ANOVA
one_way <- aov(exam_score ~ study_method, data = student_data)

```

Summary

```
summary(one_way)
```

Output:

```

> student_data <- read.csv("Exam_Score_Prediction.csv")
> # Convert to factor
> student_data$study_method <- as.factor(student_data$study_method)
> # One-way ANOVA
> one_way <- aov(exam_score ~ study_method, data = student_data)
> # Summary
> summary(one_way)
    Df  Sum Sq Mean Sq F value Pr(>F)
study_method     4 249227   62307   180.5 <2e-16 ***
Residuals      19995 6901037      345
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

```

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Practical – VIII

Roll No.: S044	Name: Omkar Thukarul
Class: SYIT	Batch: 1
Date of Assignment: 17/01/2026	Date/Time of Submission: 17/01/2026

8 Performing two-way ANOVA using aov() (R).

Code:

```
# Convert to factors
student_data$sleep_quality <- as.factor(student_data$sleep_quality)
student_data$class_attendance <- as.factor(student_data$class_attendance)

# Two-way ANOVA
two_way <- aov(exam_score ~ sleep_quality * class_attendance,
                 data = student_data)

# Summary
summary(two_way)
Output:

> student_data$class_attendance <- as.factor(student_data$class_attendance)
> # Two-way ANOVA
> two_way <- aov(exam_score ~ sleep_quality * class_attendance,
+                  data = student_data)
> # Summary
> summary(two_way)
   Df  Sum Sq Mean Sq F value Pr(>F)
sleep_quality           2  282838  141419 457.202 <2e-16 ***
class_attendance        588  866694    1474   4.765 <2e-16 ***
sleep_quality:class_attendance 1176  360998      307   0.992  0.566
Residuals                18233 5639733      309
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

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Practical – IX

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9 Conducting Chi-square tests using chisq.test() (R)

Use a different dataset for each practical. Frame the hypothesis and show whether the hypothesis is accepted or rejected with valid reasoning.

Code:

```
# Create contingency table
table_data <- table(student_data$gender,
                     student_data$internet_access)

# Chi-square test
chi_test <- chisq.test(table_data)

# Output
chi_test
Output:
> # Create contingency table
> table_data <- table(student_data$gender,
+                      student_data$internet_access)
> # Chi-square test
> chi_test <- chisq.test(table_data)
> # Output
> chi_test

Pearson's Chi-squared test

data: table_data
X-squared = 0.97259, df = 2, p-value = 0.6149
```