

Grade 11 Computer Science

Project Work: Part I

Full Marks: 36

Number of Questions: 6

Chapters Covered

1. Number System
2. Number System Conversion
3. Boolean Logic
4. Application Package
 - o Word Processing: Microsoft Word
 - o Spreadsheet Package: Microsoft Excel

General Instructions

1. Attempt all six questions.
2. Complete the project work individually.
3. Read each question carefully and complete all the required tasks.
4. Show the calculation steps clearly for number system questions.
5. For practical questions, perform the tasks using Microsoft Word and Microsoft Excel.
6. Include clear screenshots or printouts of the completed practical work.
7. Use appropriate formatting, headings, tables, formulas, and page layouts.
8. Students are encouraged to conduct simple research to understand the features and concepts used in the project.
9. Students should be able to explain the formulas, functions, and methods used in their practical work.
10. Do not simply copy answers or practical work from other students or the internet.
11. Include a References section at the end of the project.
12. Submit the project in a neat and properly organized file.

Hatiya, Baglung
2005

Galkot Municipality

Project Questions

Q.1. Number System

[6 Marks]

a. Explain the following number systems, including their base, digits/symbols used, and one example of each:

- Decimal
- Binary
- Octal
- Hexadecimal

[4 Marks]

b. Answer the following:

- What is the radix/base of the binary number system?
- Why are binary numbers important in computers?

[2 Marks]

Q.2. Number System Conversion

[6 Marks]

Convert the following numbers. Show all necessary calculation steps.

- Convert $(856.274)_{10}$ into binary. [2 Marks]
- Convert $(10110110.1110)_2$ into decimal. [2 Marks]
- Convert $(3472.25)_8$ into decimal. [1 Mark]
- Convert $(2AD.35)_{16}$ into decimal. [1 Mark]

Q.3. Binary Subtraction Using 1's and 2's Complement

[6 Marks]

Perform the following binary subtractions using the 1's complement and 2's complement methods. Show all the necessary steps clearly.

a. Using 1's Complement

Subtract:

$$(10110)_2 - (01011)_2$$

Show the following steps:

- Write the minuend and subtrahend.
- Find the 1's complement of the subtrahend.
- Perform binary addition.
- Handle the end-around carry.
- Write the final answer.

[3 Marks]

b. Using 2's Complement

Subtract:

$$(11001)_2 - (01010)_2$$

Show the following steps:

- Write the minuend and subtrahend.
- Find the 2's complement of the subtrahend.
- Perform binary addition.
- Handle the final carry.
- Write the final answer.

[3 Marks]

Q.4. Boolean Logic

[6 Marks]

a. Explain the following logic gates with their symbols, Boolean expressions, and truth tables:

- AND
- OR
- NOT

[3 Marks]

b. Consider the Boolean expression:

$$Y = (A \text{ AND } B) \text{ OR NOT } C$$

Prepare the complete truth table for the expression by considering all possible values of A, B, and C.

[3 Marks]

Students should clearly show the intermediate results of the AND, NOT, and OR operations.

Q.5. Application Package: Microsoft Word

[6 Marks]

Prepare a two-page school newsletter using Microsoft Word on the topic:

"Technology in Modern Education"

Your document should include the following:

- A suitable title and subtitle
- At least three paragraphs
- An image related to technology or education
- A bulleted list of at least five points
- A table containing at least 4 rows and 4 columns
- Header and footer
- Page numbers
- Page border
- Appropriate font, font size, alignment, line spacing, and paragraph formatting

Tasks:

a. Create and properly format the newsletter using appropriate Microsoft Word features.

[4 Marks]

b. Use at least two different text formatting features and two paragraph formatting features, and briefly explain how they were used.

[2 Marks]

Submission: Include a printout or clear screenshots of the completed two-page newsletter.

Q.6. Application Package: Microsoft Excel

Student Result and GPA Sheet

[6 Marks]

Create a Student Result Sheet in Microsoft Excel for at least 8 students.

Use at least five subjects, for example:

- English
- Nepali

Galkot Secondary School
Galkot Municipality-3, Hatiya Baglung

- Mathematics
- Science
- Computer Science

Your worksheet should contain columns similar to:

Roll No., Student Name, English, Nepali, Mathematics, Science, Computer, Total, Grade, GPA, Result

Tasks:

a. Enter the marks of at least 8 students and use appropriate Excel formulas to calculate the Total Marks and Percentage of each student.

[1.5 Marks]

b. Use an appropriate IF or nested IF formula to determine the student's Grade based on the percentage.

For example, students may use a grading scale such as:

Percentage	Grade
90–100	A+
80–89	A
70–79	B+
60–69	B
50–59	C+
40–49	C
Below 40	NG

[1.5 Marks]

c. Calculate the GPA of each student using suitable Excel formulas based on the grade/grade point obtained in each subject.

[1 Mark]

d. Use an Excel formula to display "PASS" or "FAIL" in the Result column. A student should be considered passed only when the required minimum marks are obtained in all subjects.

[1 Mark]

e. Apply suitable formatting to the result sheet and create a column chart showing the total marks of the students.

[1 Mark]

Submission: Submit a printout or clear screenshot of the completed Excel result sheet and chart.

Note: Students should write the formulas used for Total, Percentage, Grade, GPA, and Result below or beside their worksheet so that the teacher can verify their work.