# Q1 (a): Differentiate between low level, high level and assembly programming languages with two examples each.

Low Level Languages:

* Machine Language (Binary 0s and 1s)
* Assembly Language (Close to hardware, symbolic representation) High Level Languages:
* C, Java, Python (easy to understand, portable across systems)

# Q1 (b): How does a program work (compilation to execution)?

1. Source Code written by programmer.
2. Preprocessing: Handles directives (#include, #define).
3. Compilation: Converts to assembly.
4. Assembler: Converts assembly to machine code (object code).
5. Linking: Combines object code with libraries.
6. Loader: Loads executable into memory.
7. Execution: CPU executes instructions.

# Q2: C program to calculate sum, difference, product, quotient, remainder

#include <stdio.h>

int main() {

int a, b;

printf("Enter two integers: "); scanf("%d %d", &a, &b);

printf("Sum = %d\n", a + b); printf("Difference = %d\n", a - b); printf("Product = %d\n", a \* b);

if (b != 0) {

printf("Quotient = %d\n", a / b); printf("Remainder = %d\n", a % b);

} else {

printf("Division by zero not allowed!\n");

}

return 0;

}

# Q3: Compound Interest Calculation

#include <stdio.h> #include <math.h>

int main() {

double P, r, CI;

int t;

printf("Enter Principal, Rate and Time: "); scanf("%lf %lf %d", &P, &r, &t);

CI = P \* pow((1 + r / 100), t) - P;

printf("Compound Interest = %.2lf\n", CI);

return 0;

}

# Q4: USD to PKR conversion

#include <stdio.h>

int main() {

double usd, pkr;

printf("Enter amount in USD: "); scanf("%lf", &usd);

pkr = usd \* 280;

printf("Amount in PKR = %.2lf\n", pkr); return 0;

}

# Q5: Check positive/even or negative/odd

#include <stdio.h>

int main() {

int num;

printf("Enter an integer: "); scanf("%d", &num);

if (num > 0 && num % 2 == 0) { printf("Positive and Even\n");

} else if (num < 0 && num % 2 != 0) { printf("Negative and Odd\n");

} else {

printf("Does not match conditions\n");

}

return 0;

}

# Q6: Find larger number using ternary operator

#include <stdio.h>

int main() {

int a, b, max;

printf("Enter two numbers: "); scanf("%d %d", &a, &b);

max = (a > b) ? a : b; printf("Larger number = %d\n", max); return 0;

}

# Q7: Expression Evaluation

Expression: int result = 5 + 3 \* 2 > 10 && 8 - 4 != 2;

Step 1: 3 \* 2 = 6

Step 2: 5 + 6 = 11

Step 3: 11 > 10  true (1)

Step 4: 8 - 4 = 4

Step 5: 4 != 2  true (1)

Step 6: 1 && 1 = 1 Final result = 1