Variant 1

1. Compare single-user and multi-user operating systems. Provide examples of each.
2. Explain the fetch-execute cycle
3. Describe the interaction between the CPU and peripheral devices in a computer system.

Variant 2

1. Explain the differences between RAM and ROM.
2. Simplify the logical expression:

$$\overline{\bar{A} + \bar{B}} + B.\bar{A}$$

3. Write an examples of bespoke software

Variant 3

1. Compare Batch OS and Real-Time OS. Provide examples of each.
2. Write the code in LMC: C=num1+ num2;
3. Explain the purpose of cache memory in a computer system.

Variant 4

1. Describe the purpose of virtual memory and its importance in computing.
2. Build a truth table for the XOR (exclusive OR) operation with two input variables, P and Q.
3. Simplify the logical expression:

$$Q = B.C.(\overline{C} + D) + C.D + C + \overline{A}$$

Variant 5

1. Explain difference between GUI and CLI
2. Write the code in LMC: C=(num1 + num2) - num3;
3. Explain the interaction of the CPU with peripheral devices and how data is transferred between them.

Variant 6

1. Explain the purpose of registers
2. Explain the purpose and basic functions of an operating system in a computer.
3. Simplify the logical expression:

$$A \cdot \overline{C} \vee C \cdot (B \vee \overline{C}) \vee (A \vee \overline{B}) \cdot C$$

Variant 7

1. Write the code in LMC: C=(num1 + num2) - num3;
2. Compare single-user and multi-user operating systems. Provide advantages and disadvantages of each.
3. Describe the purpose of CPU components

Variant 8

1. Two disadvantages of multitasking operating system
2. Explain the differences between RAM and ROM in terms of their characteristics and usage.
3. Build a truth table for the NAND (NOT AND) operation with two input variables, X and Y.

Variant 9

1. Compare single-tasking and multitasking operating systems. Provide examples of both types.
2. Explain the purpose of virtual memory and how it helps in managing system resources.
3. Simplify the logical expression:

$$\left(\overline{A} \vee \overline{B} \vee \overline{C}\right) \cdot \left(\overline{A} \vee B \cdot C\right)$$

Variant 10

1. Explain the interaction between the CPU components
2. Describe the purpose of cache memory in a computer system and its impact on performance.
4. Analyze a simple program written in the language of assembly and identify key Write the code in LMC: C=num1 - num2;

Variant 11

1. Analyze a simple program written in the language of assembly and identify key Write the code in LMC: C=num1 - num2;
2. Explain what RAM is used for:
3. Explain the "Decode" step

Variant 12

1. Describe advantages of the GUI
2. Explain the purpose of virtual memory and how it extends a computer's physical memory.
3. Simplify the logical expression:

$$\mathbf{Q = B.(A + \overline{C}) + A + A.(\overline{A} + B)}$$