



Please answer the following questions:

Q1: Convert the following arithmetic expressions from Reverse Polish Notation to Infix Notation.

- ABCDE * / - +
- ABC * /D - EF/+
- ABCDEFGH + * * * * *

Q2: Determine the micro-operations that will be executed in the processor when the following 14-bit control words are applied.

- 00101001100101
- 00000000000000
- 01001001001100
- 00000100000010

Q3: An instruction is stored at location 300 with its address field at location 301. The address field has the value 400. A processor register R1 contains the number 200. Evaluate the effective address if the addressing mode of the instruction is a) Direct, Immediate, Relative, Register indirect, and Index with R1 as the index register.

Q4: The program in a computer compares two signed numbers A and B by performing the subtraction $A - B$ and updating the status bits. Let $A = 01000001$ and $B = 10000100$.

- Evaluate the difference and interpret the binary result.
- Determine the value of status bits S, Z, and V .
- List the conditional branch instructions that will have a true condition.

Q5: Three computers use register windows with the following characteristics. Determine the window size and the total number of registers in each computer.

	Computer 1	Computer 2	Computer 3
Global registers	10	8	16
Local registers	10	8	16
Common registers	6	8	16
Number of windows	8	4	16

Q6: Write a program to evaluate the arithmetic statement:

$$X = \frac{A - B * (C * (D - E))}{F + G * H}$$

- Using a general register computer with three address instructions.
- Using a general register computer with two address instructions.
- Using an accumulator type computer with one address instructions.
- Using a stack organized computer with zero-address operation instructions.

Good luck.

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