

Central Processor

EVALUATION SHEET

1. Indicate whether each of the functions below refers to the control unit (C) or the arithmetic-logic unit (A) of the CPU by writing the correct letter in the space provided.

Function	Unit of CPU
Directs data movement among the CPU, memory and I/O devices.	<u> C </u>
Locates and retrieves instructions from memory, one at a time.	<u> C </u>
Performance of tests, such as the comparison of two values.	<u> A </u>
Executes all computations.	<u> A </u>
Decodes each instruction and generates the signals to start the specific action.	<u> C </u>

2. Match each of the following CPU components with its function.

Component	Function
Accumulator	<u>c</u>
Address Register	<u>f</u>
Arithmetic-Logic Circuits	<u>e</u>
Buffer Register	<u>h</u>
Control Logic	<u>b</u>
Instruction Decoder	<u>g</u>
Program Counter	<u>d</u>
Instruction Register	<u>a</u>

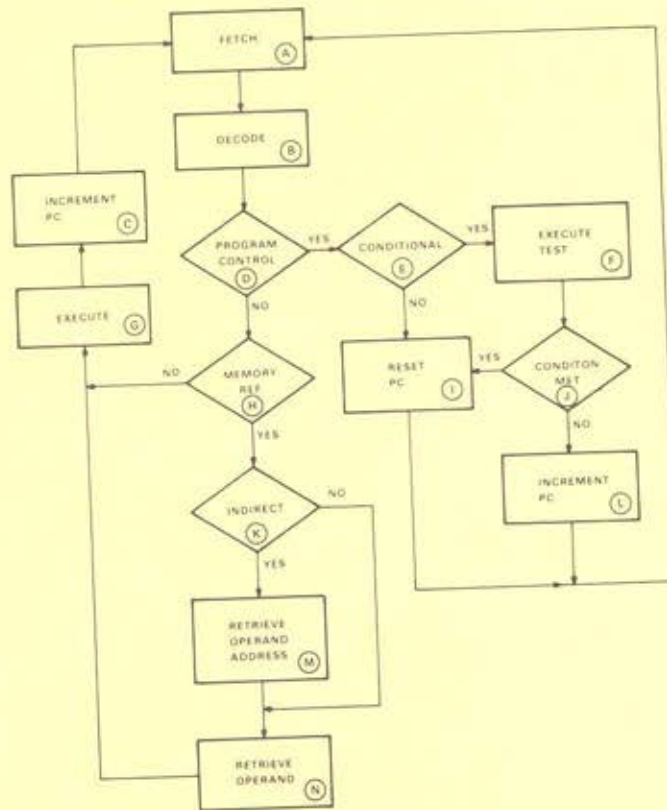
Functions

- a. A register in the CU that holds an instruction while it is being decoded and executed.
- b. The component in the CU that is responsible for switching the data paths between CPU registers and for triggering components when information is ready for them.
- c. A register in the ALU that is used as a working area for computations.
- d. A register in the CU that indicates which instruction is the next to be executed.
- e. The component in the ALU that performs the actual calculations and tests through the use of adders, shift registers, and other circuits.
- f. A register in the CU that is used to hold the address of the memory location currently being referenced by the CPU.
- g. The component of the CU responsible for changing the OP code of an instruction into a unique signal to the control logic.
- h. A register in the CPU that is used to hold one instruction or one word of data during a store or fetch operation involving memory.

3. Referring to the flowchart below, write the *letters* of *all* the flowchart steps that are included in the instruction cycle of the instruction: ADD I 300.

Place your answers in alphabetical order!

ADD I 300



ANSWERS: A B C D G H K M N

4. The simple program at the right has been stored in the computer's memory.

Step through this program one instruction at a time by indicating what information is contained in each of the five major CPU registers at the end of each instruction cycle. Use the table below which shows the first instruction as an example.

Program

Address	Contents
273	CLA
274	ADD 300
275	ADD 302
276	ADD 303
277	JMP 304
300	15
301	222
302	1000
303	1
304	STR 301
305	HLT 301

Registers

Program Counter		Buffer Register	Address Register	Instruction Register	Accumulator
Before Execution	After Execution				
273	274	"CLA"	273	"CLA"	0
274	275	15	300	"ADD 300"	15
275	276	1000	302	"ADD 302"	1015
276	277	1	303	"ADD 303"	1016
277	304	"JMP 304"	277	"JMP 304"	1016
304	305	1016	301	"STR 301"	0
305	306	"HLT"	305	"HLT"	0

5. Indicate which of the following statements refer to synchronous (S) and those that refer to asynchronous (A) computers by writing the correct letter in the space provided.

Statement	Type of Computers
Faster than the other type because there is no waiting time between operations.	<u> A </u>
When an operation is completed, it transmits a signal to immediately initiate the next operation.	<u> A </u>
Each operation allotted a fixed time; next operation begun when time interval is exhausted.	<u> S </u>

6. Circle the *letters* of the functions that refer to the computer console.

- (a.) Initiate execution of a program.
- b. Load small- to medium-size programs into memory.
- (c.) Check status of a program.
- (d.) Examine or alter the contents of a memory location.
- e. Select status of a program.
- (f.) Load small programs into memory.