Central Processor

MODULE TEST

You may wish to review the exercises or audio-visual material before taking this module test. Once you begin the test, do not refer to the course materials.

There are six questions.

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.	____
Locates and retrieves instructions from memory, one at a time.	____
Performance of tests, such as the comparison of two values.	____
Executes all computations.	____
Decodes each instruction and generates the signals to start the specific action.	____

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

Component	Function
Accumulator	____
Address Register	____
Arithmetic-Logic Circuits	____
Buffer Register	____
Control Logic	____
Instruction Decoder	____
Program Counter	____
Instruction Register	____

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.

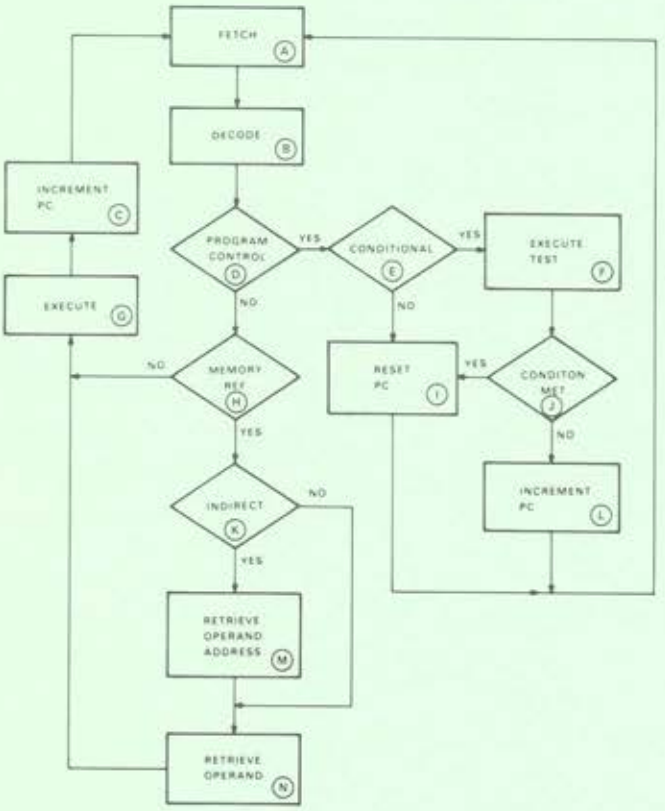
g. The component of the CU responsible for changing the OP code of an instruction into a unique signal to the control logic.

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: _ _ _ _ _ _ _ _ _

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					
Before Execution	After Execution	Buffer Register	Address Register	Instruction Register	Accumulator
273	274	"CLA"	273	"CLA"	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.	_____
When an operation is completed, it transmits a signal to immediately initiate the next operation.	_____
Each operation allotted a fixed time; next operation begun when time interval is exhausted.	_____

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.