Chapter 7   Relay Type Instructions

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Basic Programmable Logic Controllers, ECONMT-142 fall
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1. **Briefly describe the action of the EXAMINE ON instruction.**

Answer:

The instruction EXAMINE ON occurs whenever there is Normally Open (N.O) contact instruction is used in the program to verify the given address, whether it is in ON state or OFF state. EXAMINE ON searches for the ON state in the provided address, if the connected device is in the real world, the processor sets 1 in the corresponding bit. Then a logical path will be established between the contacts which resembles a true condition. If the address location is OFF, it puts OFF in the corresponding bit place.

2. **When an N.O. limit switch is wired to an input module, and programmed using an N.O. contact symbol (EXAMINE ON), the instruction will be true when (check all correct answers):**

   a. power is applied, and the key switch is in the RUN position _____

   b. the limit switch is closed _____X_____

   c. as long as the limit switch is open _____   d. never _____

3. **If the N.O. limit switch in Question 2 is programmed using an N.C. contact symbol (EXAMINE OFF), the instruction will be true when (check all correct answers)**

   a. power is applied, and the key switch is in the RUN position _____X_____

   b. the limit switch is closed _____

   c. as long as the limit switch is open _____X_____
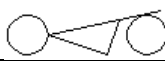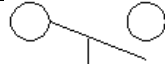
   d. never _____

4. Briefly describe the action of the EXAMINE OFF instruction.

Answer:

N.C (normally closed) symbol represents EXAMINE OFF in the programming of PLC. If the NC symbol or EXAMINE OFF finds the OFF in the device condition, it understands it as logically TRUE and power flows through the path. EXAMINE OFF instruction searches for the OFF status of any device. If it is OFF, the corresponding bit value will be set to 0 otherwise to 1. So, EXAMINE OFF when finds bit value 0 in the device image word, the instruction becomes TRUE and the circuit will operate.

5. Indicate the logic, (T = True or F = False) for the following contacts:

Condition of Input Device	Program Instruction	Logic True - False
	-| |-	**T** F
	-| |-	T **F**
	-| \ |-	T **F**
	-| \ |-	**T** F

6. The XIO instruction is the same as:

a. EXAMINE ON _____X_____   b. EXAMINE OFF _____

7. The XIC instruction is the same as:

a. EXAMINE ON _____   b. EXAMINE OFF _____X_____