



قائمة الاسئلة

اختبار النهائي للعام الجامعي 2025/2024-كلية الهندسة :: تحكم صناعي- كلية الهندسة - قسم الكهرباء- المستوى الرابع - حاسبات- ثلاث ساعات  
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1) A \_\_\_ is an example of an actuator that could be controlled by a discrete output from a PLC.

- a) pushbutton
- b) motor starter
- c) limit switch
- d) all of the above

- 1) - a
- 2) + b
- 3) - c
- 4) - d

2) Field or real-world devices refer to \_\_\_\_\_

- a) input devices only.
- b) output devices only.
- c) load devices only.
- d) all devices that are physically wired to the PLC.

- 1) - a
- 2) - b
- 3) - c
- 4) + d

3) The two methods of transmitting PLC digital data are

- a) AC and DC.
- b) input and output.
- c) serial and parallel.
- d) negative and positive

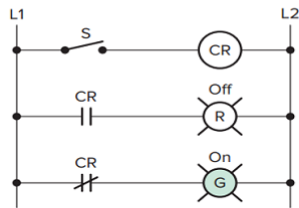
- 1) - a
- 2) - b
- 3) + c
- 4) - d

4)





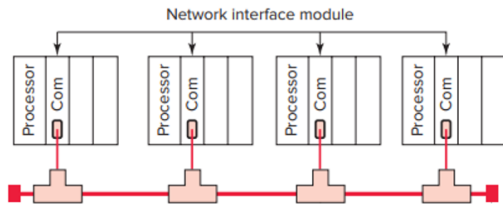
In the hardwired relay control circuit shown, when the switch is closed, CR coil is:



- a) energized, the red light is off, and the green light is on.
- b) de-energized, the red light is off, and the green light is on.
- c) energized, the red light is on, and the green light is off.
- d) energized, and the red and green lights are both on.

- 1) - a
- 2) - b
- 3) + c
- 4) - d

5) The type of network connection topology shown in Figure is



- a) bus.
- b) tree.
- c) star.
- d) ring.

- 1) + a
- 2) - b
- 3) - c
- 4) - d

6) Network \_\_\_\_ defines how data are arranged and coded for transmission on a network.

- a) devices
- b) protocol
- c) medium
- d) functions

- 1) - a
- 2) + b
- 3) - c
- 4) - d

7)





The fundamental job of a local area network (LAN) is to provide \_\_\_\_ between devices.

- a) communication
- b) isolation
- c) connections
- d) protection

- 1)  a
- 2)  b
- 3)  c
- 4)  d

8) A distributive control system (DCS) \_\_\_\_\_

- a) permits the distribution of the processing task among several controllers.
- b) always utilizes a single large computer.
- c) will stop the whole process if one control element fails.
- d) is the least flexible type of control system.

- 1)  a
- 2)  b
- 3)  c
- 4)  d

9) PLC system data communications is accomplished using

- a) network links.
- b) point-to-point serial communications links.
- c) transformer links.
- d) both a and b

- 1)  a
- 2)  b
- 3)  c
- 4)  d

10) .The two types of patterns used to accomplish the scan function are:

- a) up and down.
- b) horizontal and vertical.
- c) input and output.
- d) left and right.

- 1)  a
- 2)  b
- 3)  c





4) - d

11) Which hardware circuit is essential for safety in a PLC?

- a) Latching Circuit.
- b) Interlock Circuit.
- c) Safety Digital Circuit.
- d) Emergency Stop Circuit.

1) - a

2) - b

3) - c

4) + d

12) Which one is the example of a device that could be used to provide a discrete input to a PLC?

- a) Selector Switch
- b) Pushbutton.
- c) Limit Switch.
- d) All of the options.

1) - a

2) - b

3) - c

4) + d

13) Identify an example of a device that can be controlled by a discrete input to a PLC.

- a) Motor Starter.
- b) Selector Switch
- c) lights
- d) All of the options.

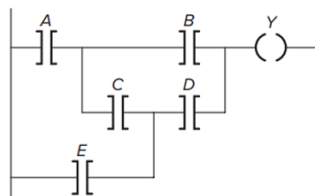
1) - a

2) + b

3) - c

4) - d

14) The Boolean equation for the logic represented in the ladder diagram can be expressed as:



a)  $Y = (AB) + (ACD) + (DE)$

b)  $Y = (AB) + (CD) + E$

c)  $Y = (AB) + (AC) + (AD) + (ED)$

d)  $Y = (AB) + (ACD) + (DE) + (BCE)$





- 1) - a
- 2) - b
- 3) - c
- 4)  d

15) What is the purpose of the Battery Backup in a PLC?

- a) To Store User Programs
- b) To Provide Emergency Power During a Power Loss
- c) To Convert Signals
- d) To Connect Network Devices

- 1) - a
- 2)  b
- 3) - c
- 4) - d

16) . What is the most common form of memory used to store, back up, or transfer PLC programs?

- a) RAM.
- b) Flash EEPROM.
- c) EEPROM.
- d) Both Flash EEPROM and EEPROM.

- 1) - a
- 2) - b
- 3) - c
- 4)  d

17) What does the I/O system in a PLC provide an interface between?

- a) Input modules and output modules.
- b) The CPU and field equipment.
- c) The CPU and I/O rack.
- d) The I/O rack and I/O modules.

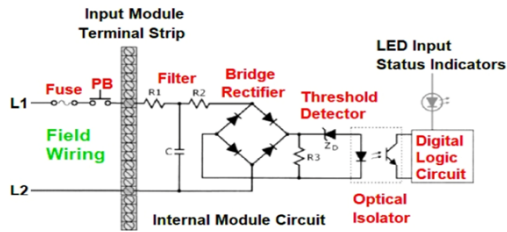
- 1) - a
- 2)  b
- 3) - c
- 4) - d

18)





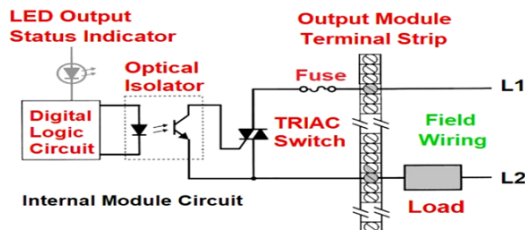
18) What is the purpose of the zener diode (ZD) in the schematic diagram?



- Assist in diagnosing faults.
- Define the minimum detectable voltage level.
- Provide protection against electrical noise interference.
- Segregate logic circuits from higher line voltage.

- a
- b
- c
- d

19) Where does the input signal to the module originate from?



- The input field device.
- The output field device.
- Internal logic circuitry of the processor.
- Either the input field device or output field device.

- a
- b
- c
- d

20) What is the purpose when the PLC system is used with an Interposing Relay?

- Isolate the load from the controller.
- Control a high resistance.
- Control a high current load.
- Vary the speed of a motor.

- a
- b
- c
- d

21)





One function of a PLC input interface module is to:

- a) accept signals from field devices and convert them into signals that can be used by the processor.
- b) convert signals from the processing unit into values that can be used to control the machine or process.
- c) input signals from the programming device and convert them into signals that can be used by the CPU.
- d) interpret and execute the user program that controls the machine or process

- 1)  a
- 2)  b
- 3)  c
- 4)  d

22) What are the typical variances for analog inputs and outputs?

- a) 0 to 20 mA.
- b) 4 to 20 mA.
- c) 0 to 10 volts.
- d) All of the options.

- 1)  a
- 2)  b
- 3)  c
- 4)  d

23) A current sourcing sensor is connected to which type of PLC input module?

- a) Current sinking.
- b) Current sourcing.
- c) Alternating current.
- d) Either current sinking or sourcing.

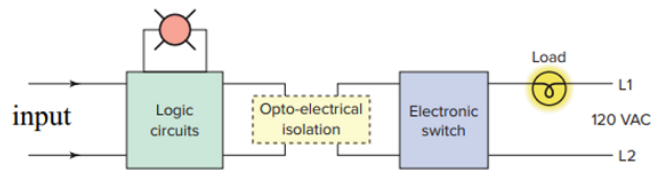
- 1)  a
- 2)  b
- 3)  c
- 4)  d

24)





24. For the block diagram of the output module shown in Figure, the input comes from the \_\_\_\_\_



- a) input field device.
- b) processor.
- c) output field device.
- d) line power supply.

- 1) - a
- 2) + b
- 3) - c
- 4) - d

25) The main element of an analog output module is:

- a) AC to DC rectifier.
- b) DC to AC inverter.
- c) Analog to digital converter.
- d) Digital to analog converter.

- 1) - a
- 2) - b
- 3) - c
- 4) + d

26) What type of PLC is typically used for small-scale applications?

- a) Modular PLC.
- b) Specialized PLC.
- c) Redundant PLC.
- d) Compact PLC.

- 1) - a
- 2) - b
- 3) - c
- 4) + d

27)







What ensures that a PLC can recover its program after a power failure?

- a) RAM.
- b) EEPROM.
- c) CPU.
- d) ROM.

- 1) - a
- 2) + b
- 3) - c
- 4) - d

28) What specification in a PLC system defines the number of field inputs or outputs that can be connected to a single module?

- a) Electrical isolation.
- b) Points per module.
- c) Threshold voltage.
- d) Current per input.

- 1) - a
- 2) + b
- 3) - c
- 4) - d

29) The ladder logic in PLC consists of \_\_\_\_\_

- a. Logic gates
- b. Functional blocks
- c. Relay contacts and coils
- d. Relays

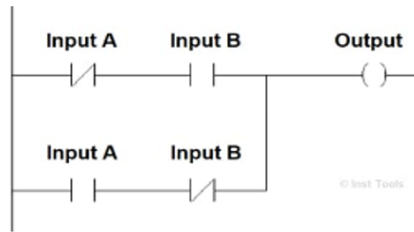
- 1) - a
- 2) - b
- 3) + c
- 4) - d

30)





What is the specific logic gate function depicted by PLC ladder logic?



- a) XOR.
- b) XNOR.
- c) NAND.
- d) NOR.

- 1)  a
- 2)  b
- 3)  c
- 4)  d

31) The relays operate on \_\_\_\_\_

- a) Low power
- b) Control circuits of very high power
- c) Both a and b
- d) None of the above

- 1)  a
- 2)  b
- 3)  c
- 4)  d

32) Discrete output modules with transistor outputs can be used for control of ..... devices.

- a) AC.
- b) DC.
- c) AC or DC.
- d) None of the above

- 1)  a
- 2)  b
- 3)  c
- 4)  d

33)





A continuous process is \_\_\_\_\_

- a) one that never shuts down.
- b) used only for simple tasks.
- c) one in which raw materials enter one end of the system and the finished product comes out the other end.
- d) used only with computers

- 1) - a
- 2) - b
- 3) + c
- 4) - d

34) . Communication between different PLC architectures and protocols is \_\_\_\_\_ made possible by the use of

- a) rectifiers.
- b) gateways.
- c) repeaters.
- d) hubs.

- 1) - a
- 2) + b
- 3) - c
- 4) - d

35) The output interface module connects to \_\_\_\_\_

- a) sensing devices such as switches or pushbuttons.
- b) load devices such as lamps or solenoids.
- c) a programming device such as a computer.
- d) all of the above

- 1) - a
- 2) + b
- 3) - c
- 4) - d

36) Volatile memory elements can be classified as those that

- a) do not retain stored information when the power is removed.
- b) retain stored information when the power is removed.
- c) do not require a battery backup.
- d) both b and c.

- 1) + a
- 2) - b





- 3) - c
- 4) - d

37) A human machine interface (HMI) \_\_\_\_\_

- a) allows the user to monitor a process.
- b) allows the user to control a process.
- c) can provide a graphical representation of a process.
- d) all of the above

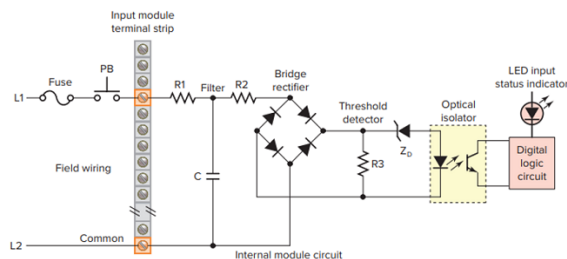
- 1) - a
- 2) - b
- 3) - c
- 4) + d

38) At the start of the PLC scan the \_\_\_\_\_

- a) status of all inputs is read.
- b) status of all outputs is updated.
- c) program is executed.
- d) diagnostics and communications tasks are executed.

- 1) + a
- 2) - b
- 3) - c
- 4) - d

39) The schematic diagram of Figure is that of a(n) \_\_\_\_



- a) discrete output module.
- b) discrete input module.
- c) analog output module.
- d) analog input module.

- 1) - a
- 2) + b
- 3) - c
- 4) - d

40)





When talking about PLC memory, 1K refers to \_\_\_\_\_ words.

- a) 255.
- b) 1124.
- c) 1024.
- d) 124

- 1) - a
- 2) - b
- 3) + c
- 4) - d

