

TEST BANK

**INDUSTRIAL
ELECTRONICS**



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TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 1) A discrete device is one that has only two states, on and off. 1) _____
Answer: True False
- 2) The mechanical device used to change the state of a switch is called the pole. 2) _____
Answer: True False
- 3) Switches designated for electronic circuit applications are not designed to switch medium to high power. 3) _____
Answer: True False
- 4) Electronic duty switch contacts are designed to switch high currents and pilot duty contacts are more suited for switching very small current levels. 4) _____
Answer: True False
- 5) When a toggle switch is in the off position, the NO contacts are an open circuit and the NC contacts are shorted. 5) _____
Answer: True False
- 6) A DPDT switch contact configuration would have two poles, two NC contacts, and two NO contacts. 6) _____
Answer: True False
- 7) The term "throw" in a switch designation indicates if the switch has only a NO or if the switch has both NO and NC contacts. 7) _____
Answer: True False
- 8) Mercury switches are useful in applications where the switching force available is very small. 8) _____
Answer: True False
- 9) Limit switches have double break contacts in most cases. 9) _____
Answer: True False
- 10) The operator must be held in the on position for maintain contact type switches to have their NO contacts shorted. 10) _____
Answer: True False
- 11) Industrial selector switches are similar to electronic rotary switches. 11) _____
Answer: True False
- 12) Selector switches are used to switch medium to high currents in industrial applications. 12) _____
Answer: True False
- 13) Limit switches come with either a side lever operator or with a side plunger. 13) _____
Answer: True False
- 14) The held open limit switch symbol is used for normally open contacts that are held open by the process. 14) _____
Answer: True False
- 15) The angle on a limit switch trip dog is a function of the velocity of the object that makes contact with the

limit
switch
lever or
plunger.

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Answer: True False

16) Relays usually have the same pull in and drop out current.

16) _____

Answer: True False

17) Commercial and industrial relays generally have the same contact configurations as switches.

17) _____

Answer: True False

18) Relays with reed and mercury wetted contacts have the lowest contact resistance.

18) _____

Answer: True False

19) On delay type time delay relays close NO contacts when power is applied and keep the contacts closed for a specified time delay.

19) _____

Answer: True False

20) The instantaneous contacts on a time delay relay operate like NO and NC contacts would on a control relay.

20) _____

Answer: True False

21) Contactors are relays used to switch high current and high power devices like motors.

21) _____

Answer: True False

22) Contactors have thermal overloads built into the switching device.

22) _____

Answer: True False

23) Three wire control just identifies the number of wires between the contactor and the control push buttons.

23) _____

Answer: True False

24) Contactor auxiliary contacts are used in the control circuit to protect the load from overload currents.

24) _____

Answer: True False

25) Contactor overload contacts are used in the motor power circuit to protect the motor from overload currents.

25) _____

Answer: True False

26) Switch problems can be grouped into two categories, problems with the operator and problems with the contacts.

26) _____

Answer: True False

27) Relay problems fall into the same two groups as switch problems, namely operators and contacts.

27) _____

Answer: True False

28) If two loads with different voltage levels had to be switched with a single break type device, you would have to choose a switch that had a minimum of two poles.

28) _____

Answer: True False

- 29) If it is necessary to switch a load current of 50 mA, then the contacts must have a good dry circuit rating and the switch must be rated for electronic duty. 29) _____
Answer: True False
- 30) If the position of an object oscillates about the switching point, then you need a position sensing switch with snap action and mercury wetted contacts. 30) _____
Answer: True False
- 31) The inrush current is higher than the sealed current for a relay because the air gaps are larger and the armature is made of laminated metal. 31) _____
Answer: True False
- 32) If a motor must start 15 seconds after the start switch is pressed, and a motor run light must come on when the start switch is pressed, then an on-delay type time delay relay must be used with one set of instantaneous contacts. 32) _____
Answer: True False
- 33) The three-wire control circuit for a motor has a momentary stop (NC) and start (NO) push button, motor contactor, and overload contacts wired in series, and an auxiliary contact connected across the stop push button contacts. 33) _____
Answer: True False

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 34) An industrial selector switch would most often have: 34) _____
A) more than three positions for the operator.
B) a push button operator.
C) a good dry circuit rating.
D) double break contacts.
Answer: D
- 35) The type of switch used to separate the motor and its control circuit from main power is a: 35) _____
A) drum controller.
B) limit switch.
C) control relay.
D) selector.
E) disconnect.
Answer: E
- 36) Which of the following parts are NOT a component in a lever type limit switch? 36) _____
A) Contact rotator
B) Operating head
C) Receptacle
D) Switch body
E) Lever
Answer: A
- 37) Which of the following components are NOT found in a typical motor starter. 37) _____
A) Start switch
B) Motor contacts
C) Overload contacts
D) Coil

E) Auxiliary contact

Answer: A

38) Which of the following components are NOT a part used in a relay? 38) _____

A) Stationary contacts

B) Armature

C) Magnet

D) Spool valve

E) Coil

Answer: D

39) Which of the following is true for a 30 second on delay type time delay relay 10 seconds after power applied to the coil? 39) _____

A) The instantaneous contacts are open.

B) The relay coil is not energized.

C) The NO contacts are open.

D) The NC contacts are open.

E) All of the above

Answer: C

40) Which of the following is true for a 30 second on delay type time delay relay 40 seconds after power applied to the coil? 40) _____

A) The coil is not energized.

B) The NO contacts are closed.

C) The NC contacts are closed.

D) The instantaneous contacts are open.

E) None of the above.

Answer: B

41) Which of the following components are NOT used to build a four-way double acting pneumatic control valve. 41) _____

A) Piston rod

B) Spool

C) Solenoid

D) Spring

E) None of the above

Answer: A



42) The device pictured above is a _____ type. 42) _____

A) Push button switch

B) Toggle switch

C) Selector switch

D) Rocker switch

E) None of the above

Answer: A



43) The device pictured above is a _____ type.

43) _____

- A) Rocker switch
- B) Push button switch
- C) Selector switch
- D) Drum switch
- E) None of the above

Answer: C



44) The device pictured above is a _____ type.

44) _____

- A) Rocker switch
- B) Limit switch
- C) Selector switch
- D) Rotary switch
- E) None of the above

Answer: E



45) The device pictured above is a _____ type.

45) _____

- A) Guarded push button switch
- B) Unguarded push button switch
- C) Wobble stick switch
- D) Mushroom push button switch
- E) None of the above

Answer: D



46) The device pictured above is a _____ type.

46) _____

- A) Selector switch
- B) Guarded push button switch
- C) Toggle switch
- D) Unguarded push button switch
- E) None of the above

Answer: B



47) The device pictured above is a _____ type.

47) _____

- A) Pointer switch
- B) Wobble stick switch
- C) Toggle switch
- D) Selector switch
- E) None of the above

Answer: B



48) The device pictured above is a _____ type.

48) _____

- A) Mushroom push button switch
- B) Guarded push button switch
- C) Pilot light
- D) Unguarded push button switch
- E) None of the above

Answer: C



49) The device pictured above is a _____ type.

49) _____

- A) Toggle switch
- B) Rocker switch
- C) Wobble stick switch
- D) Selector switch
- E) None of the above

Answer: A



50) The device pictured above is a _____ type.

50) _____

- A) Rocker switch
- B) Wobble stick switch
- C) Toggle switch
- D) Push wheel switch
- E) None of the above

Answer: E



51) The device pictured above is a _____ type.

51) _____

- A) Rocker switch
- B) Toggle switch
- C) Push button switch
- D) Slide switch
- E) None of the above

Answer: A



52) The device pictured above is a _____ type.

52) _____

- A) Push button switch
- B) Toggle switch

- C) Rocker switch
- D) Wobble stick switch
- E) None of the above

Answer: E



53) The device pictured above is a _____ type.

53) _____

- A) Push button switch
- B) Selector switch
- C) Rotary switch
- D) Toggle switch
- E) None of the above

Answer: C



54) The devices pictured above are _____.

54) _____

- A) Limit switches
- B) Rocker switches
- C) Toggle switches
- D) Drum switches
- E) None of the above

Answer: A



55) The device pictured above is a _____ type.

55) _____

- A) Selector switch
- B) Drum switch
- C) Limit switch
- D) Toggle switch
- E) None of the above

Answer: B



56) The device pictured above is a _____ switch. 56) _____
A) Flow
B) Differential pressure
C) Temperature
D) Level
E) None of the above
Answer: B



57) The device pictured above is a _____ switch. 57) _____
A) Temperature
B) Vacuum
C) Differential pressure
D) Level
E) None of the above
Answer: B



58) The device pictured above is a _____ switch. 58) _____
A) Differential pressure
B) Temperature
C) Flow
D) Level
E) None of the above
Answer: B



59) The device pictured above is a _____ relay. 59) _____
A) Industrial control
B) Commercial closed
C) Commercial open

D) Industrial contactor

E) None of the above

Answer: C



60) The device pictured above is a _____ relay.

60) _____

A) Commercial closed

B) Industrial control

C) Industrial contactor

D) Commercial open

E) None of the above

Answer: C



61) The device pictured above is a _____ relay.

61) _____

A) Industrial contactor

B) Commercial open

C) Commercial closed

D) Industrial control

E) None of the above

Answer: D



62) The device pictured above is a _____ relay.

62) _____

A) Industrial contactor

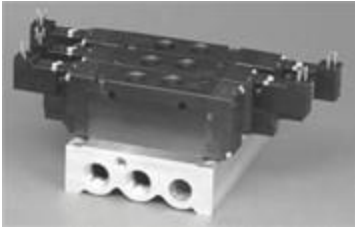
B) Industrial control

C) Commercial open

D) Commercial closed

E) None of the above

Answer: D



- 63) The device pictured above is a _____.
- A) Industrial valve with pneumatic actuator
 - B) Pneumatic valve actuator
 - C) Pneumatic valve with manifold
 - D) Pneumatic valve
 - E) None of the above

63) _____

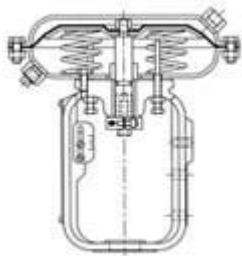
Answer: C



- 64) The device pictured above is a _____.
- A) Industrial valve with pneumatic actuator
 - B) Pneumatic valve
 - C) Pneumatic valve with manifold
 - D) Pneumatic valve actuator
 - E) None of the above

64) _____

Answer: A



- 65) The device pictured above is a _____.
- A) Pneumatic valve with manifold
 - B) Pneumatic valve actuator
 - C) Industrial valve with pneumatic actuator
 - D) Pneumatic valve
 - E) None of the above

65) _____

Answer: B

- 1) TRUE
- 2) FALSE
- 3) TRUE
- 4) FALSE
- 5) TRUE
- 6) TRUE
- 7) FALSE
- 8) TRUE
- 9) TRUE
- 10) TRUE
- 11) TRUE
- 12) TRUE
- 13) FALSE
- 14) FALSE
- 15) TRUE
- 16) FALSE
- 17) TRUE
- 18) TRUE
- 19) FALSE
- 20) TRUE
- 21) TRUE
- 22) TRUE
- 23) TRUE
- 24) FALSE
- 25) FALSE
- 26) TRUE
- 27) FALSE
- 28) TRUE
- 29) TRUE
- 30) FALSE
- 31) FALSE
- 32) TRUE
- 33) FALSE
- 34) D
- 35) E
- 36) A
- 37) A
- 38) D
- 39) C
- 40) B
- 41) A
- 42) A
- 43) C
- 44) E
- 45) D
- 46) B
- 47) B
- 48) C
- 49) A
- 50) E
- 51) A

- 52) E
- 53) C
- 54) A
- 55) B
- 56) B
- 57) B
- 58) B
- 59) C
- 60) C
- 61) D
- 62) D
- 63) C
- 64) A
- 65) B