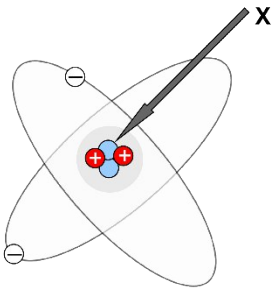
Question block created by wizard

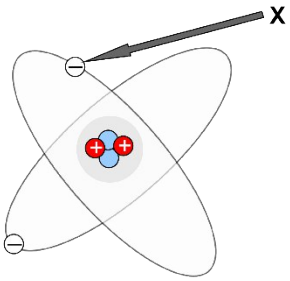
1. What is the name of the subatomic particle indicated by X?



- o (a) Electron
- o (b) Proton
- • (c) Neutron

If choice c is selected set score to 1.

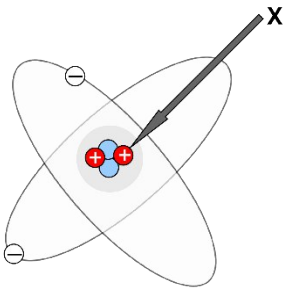
2. What is the name of the subatomic particle indicated by X?



- o (a) Neutron
- o (b) Proton
- • (c) Electron

If choice c is selected set score to 1.

3. What is the name of the subatomic particle indicated by X?



- (a) Proton

o (b) Electron
o (c) Neutron

If choice a is selected set score to 1.

4. What is the electrical charge of an electron?

- (a) Negative

o (b) Neutral
o (c) Positive

If choice a is selected set score to 1.

5. What is the electrical charge of a proton?

o (a) Negative
o (b) Neutral

- (c) Positive

If choice c is selected set score to 1.

6. What is the electrical charge of a neutron?

o (a) Negative
o (b) Positive

- (c) Neutral

If choice c is selected set score to 1.

7. What is the electrical state of an atom?

o (a) Negative state
o (b) Positive state

- (c) Neutral state

If choice c is selected set score to 1.

8. What is the name of an atom which has more than its normal amount of electrons?

- (a) A negative ion

o (b) A positive ion
o (c) An atom

If choice a is selected set score to 1.

9. What is the name of an atom which has less than its normal amount of electrons?

o (a) An atom
o (b) A negative ion

- (c) A positive ion

If choice c is selected set score to 1.

10. Give the names of the charged particles of an atom.

o (a) Protons and neutrons
o (b) Neutrons and electrons

- (c) Protons and electrons

If choice c is selected set score to 1.

11. What is a compound?

- (a) A chemical combination of two or more elements

o (b) The smallest particle of an element
o (c) A substance which cannot be reduce to a simpler substance by chemical means

If choice a is selected set score to 1.

12. What determines the valence of an atom?

o (a) The number of shells of an atom
o (b) The number of electrons

- (c) The number of electrons in the outer most shell

If choice c is selected set score to 1.

13. What is intrinsic material

- (a) A semiconductor

o (b) A conductor
o (c) An insulator

If choice a is selected set score to 1.

14. How many valence electrons has intrinsic material normally?

o (a) More than 5
o (b) Less than 3

- (c) 4

If choice c is selected set score to 1.

15. Which metal is the best conductor for electricity?

o (a) Aluminium

- (b) Silver

o (c) Copper

If choice b is selected set score to 1.

16. What is mica?

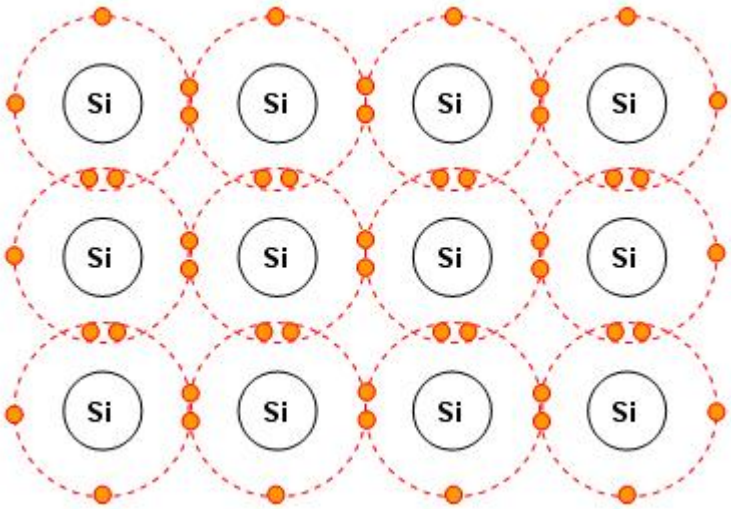
o (a) A semi-conductor

- (b) An insulator

o (c) A conductor

If choice b is selected set score to 1.

17. To what kind of material belongs this crystal lattice?

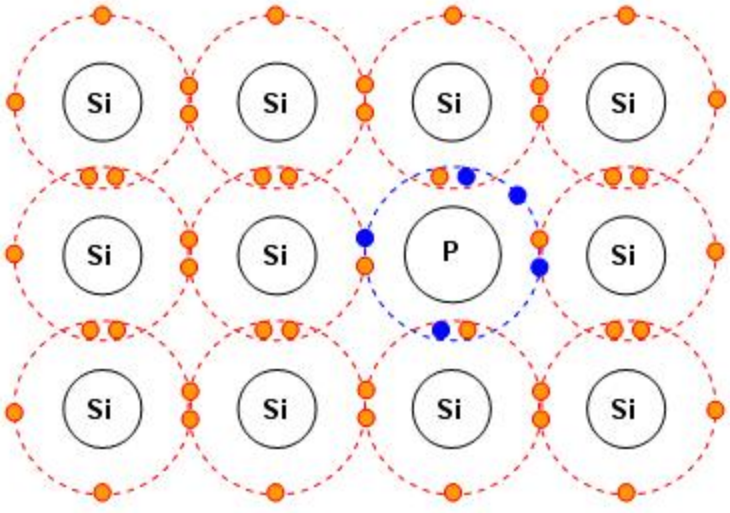


- (a) Intrinsic silicon

o (b) P silicon
o (c) N silicon

If choice a is selected set score to 1.

18. To what kind of material belongs this crystal lattice?

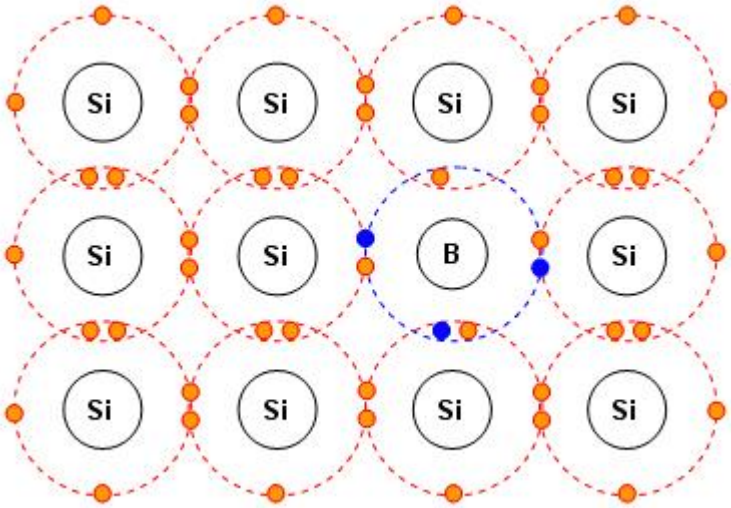


- (a) N silicon

o (b) Intrinsic silicon
o (c) P silicon

If choice a is selected set score to 1.

19. To what kind of material belongs this crystal lattice?



- (a) P silicon

o (b) Intrinsic silicon
o (c) N silicon

If choice a is selected set score to 1.

20. P-static on an aircraft can be caused by...

o (a) Electrostatic discharge between isolated parts of the structure
o (b) Lightning strike on the structure of the airplane

- (c) Rubbing between the structure and dust

If choice c is selected set score to 1.

21. The amount of electrostatic voltage generated with a low relative humidity is:

o (a) Equal to the amount of electrostatic voltage generated with a high relative humidity

- (b) higher than the amount of electrostatic voltage generated with a high relative humidity

o (c) Lower than the amount of electrostatic voltage generated with a high relative humidity

If choice b is selected set score to 1.

22. What is the purpose of a bonding wire?

- (a) Avoid spark discharges between movable parts

o (b) Isolate insulated joints of an aircraft
o (c) Avoid lightning strike on the aircrafts structure

If choice a is selected set score to 1.

23. What is the purpose of a static discharger

- (a) Limit the potential static build-up on the aircraft during flight

o (b) Limit the potential static build-up on the aircraft during refuelling
o (c) Avoid lightning strike on the aircrafts structure

If choice a is selected set score to 1.

24. Where are static dischargers attached on an aircraft

o (a) Nose
o (b) Nose wheel

- (c) Trailing edges

If choice c is selected set score to 1.

25. What is the meaning of this symbol?

o (a) Caution use gloves!

- (b) Caution ESD sensitive device!

o (c) Caution Hot Surface!

If choice b is selected set score to 1.

26. Two equally charged bodies are positioned at closed range of each other. What will happen?

o (a) The bodies will attract each other
o (b) Nothing will happen

- (c) The bodies will repel each other

If choice c is selected set score to 1.

27. Two unlike charged bodies are positioned at closed range of each other. What will happen?

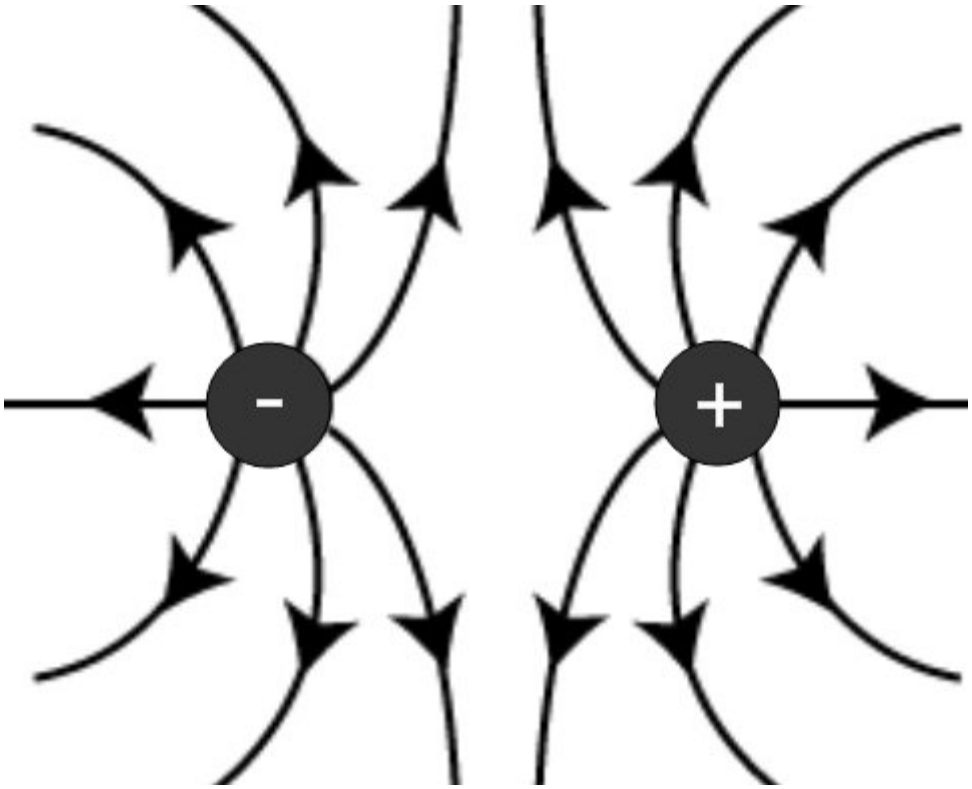
- (a) The bodies will attract each other

o (b) The bodies will repel each other
o (c) Nothing will happen

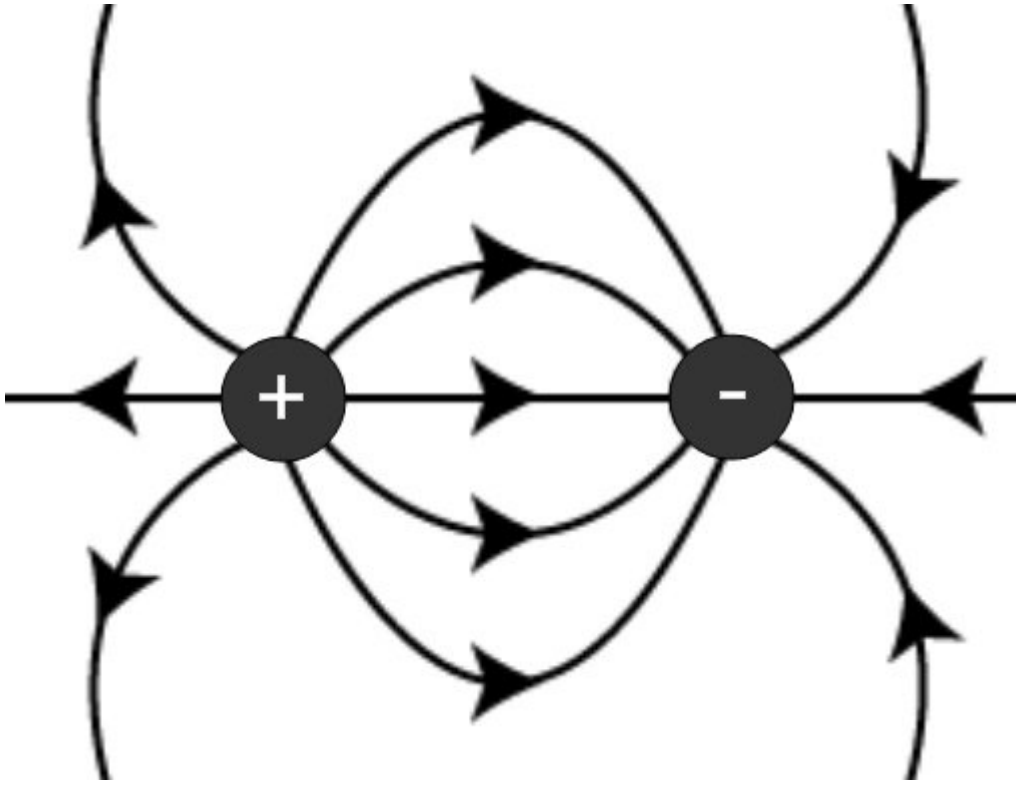
If choice a is selected set score to 1.

28. Which picture is true for electro static fields?

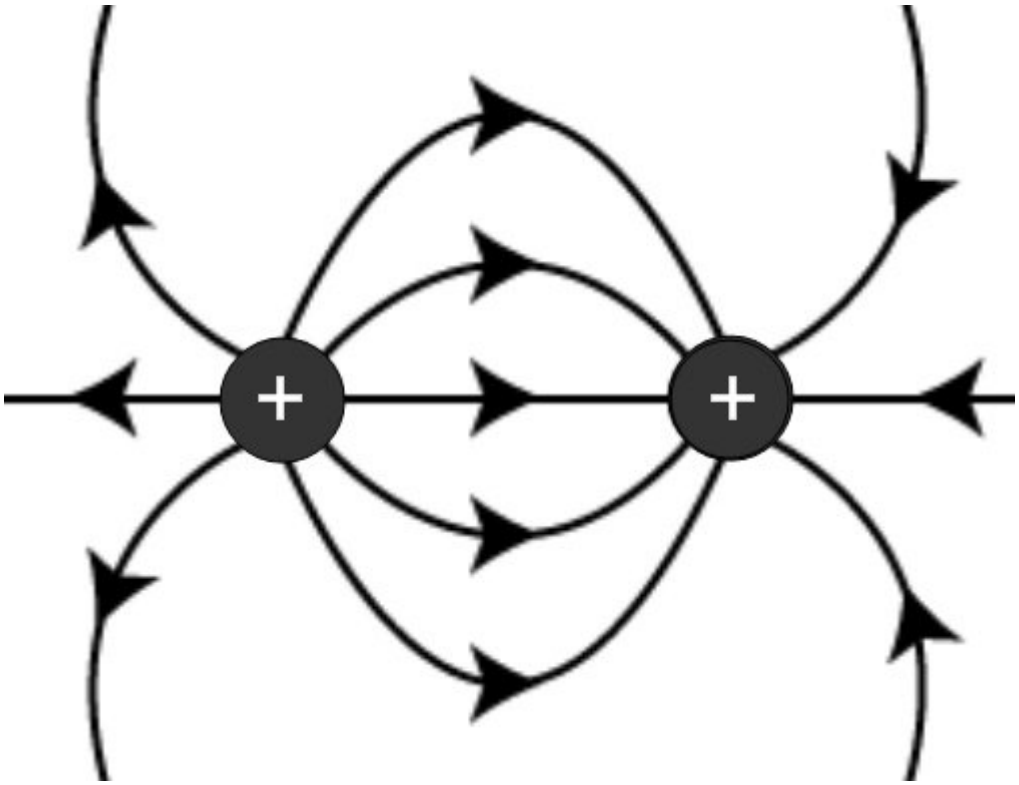
o (a)



- (b)



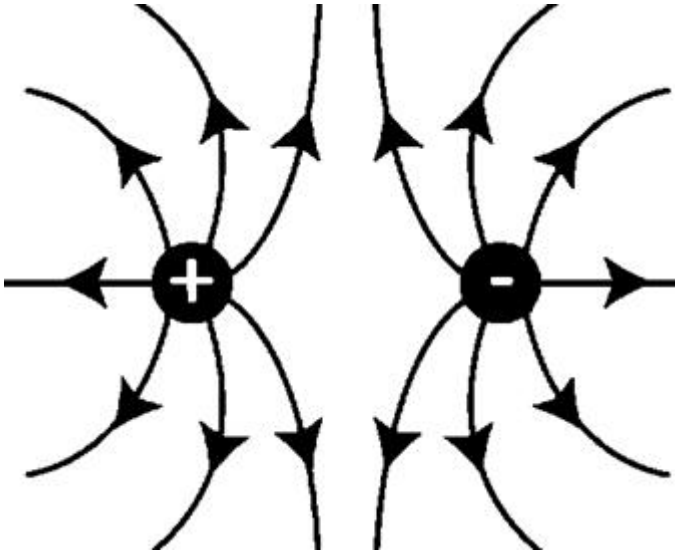
o (c)



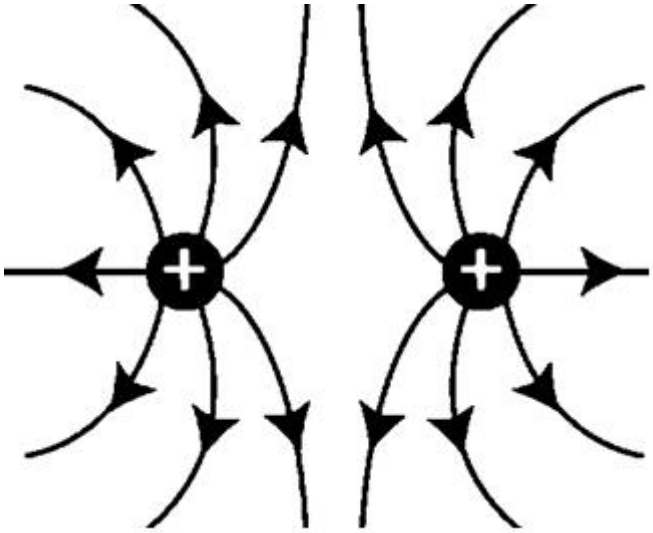
If choice b is selected set score to 1.

29. Which picture is true for electro static fields?

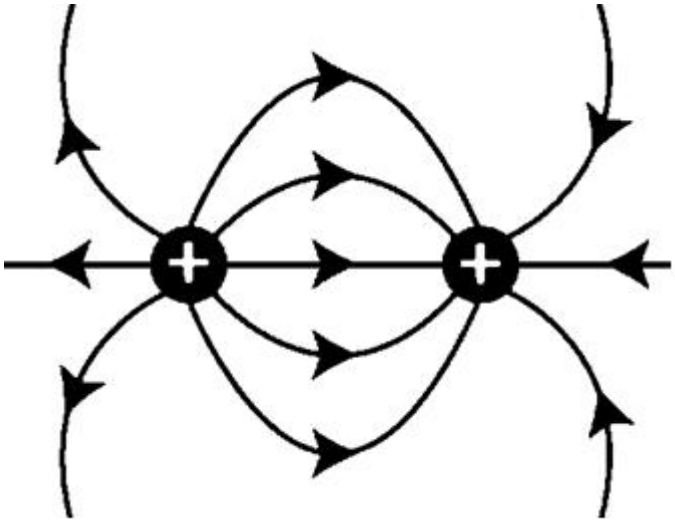
o (a)



- (b)



o (c)



If choice b is selected set score to 1.

30. The number of positive ions and negative ions in a material is equal.

What is the resulting charge of this material?

o (a) The material has a negative charge

• (b) The material has no charge

o (c) The material has a positive charge

If choice b is selected set score to 1.

31. What is the smallest known carrier of electric charge?

o (a) A neutron

• (b) An electron

o (c) A proton

If choice b is selected set score to 1.

32. Which variable influences the force between two charged bodies in free air?

o (a) The dimensions of the bodies.

• (b) The amount of charge of each body.

o (c) The polarity of the bodies.

If choice b is selected set score to 1.

33. Which variable influences the force between two charged bodies in free air?

- o (a) The polarity of the bodies.
- o (b) The dimensions of the bodies.
- • (c) The distance between the two bodies.

If choice c is selected set score to 1.

34. Ultra-pure water is...

- • (a) an insulator
- o (b) a conductor.
- o (c) a semiconductor

If choice a is selected set score to 1.

35. How is the process called to make non conducting liquids a conductor for electricity

- • (a) Ionization
- o (b) Field electron emission
- o (c) Thermo-ionic emission

If choice a is selected set score to 1.

36. A liquid conducts by means of freely moving...

- o (a) electrons and ions.
- o (b) electrons.
- • (c) positive and negative ions.

If choice c is selected set score to 1.

37. A vacuum conducts by means of freely moving...

- • (a) electrons.
- o (b) electrons and ions.
- o (c) positive and negative ions.

If choice a is selected set score to 1.

38. A gas conducts by means of freely moving...

- • (a) electrons and positive ions.
- o (b) positive and negative ions.

o (c) electrons.

If choice a is selected set score to 1.

39. What does it mean when two points are "bonded"?

- (a) They have a good electrical connection.

o (b) They are electrically isolated.
o (c) They are glued together.

If choice a is selected set score to 1.

40. What are the items shown in the figure used for?

- (a) To bond two structural parts electrically.

- o (b) To connect 2 movable components together.
- o (c) To isolate two structural parts.

If choice a is selected set score to 1.

41. What will happen, if two positive charged bodies are positioned at close range of each other?

- o (a) They will attract each other.
- • (b) They will repel each other.
- o (c) Nothing will happen.

If choice b is selected set score to 1.

42. What will happen, if two negative charged bodies are positioned at close range of each other?

- o (a) Nothing will happen.
- o (b) They will attract each other.
- • (c) They will repel each other.

If choice c is selected set score to 1.

43. What will happen, if two like charged bodies are positioned at close range of each other?

- • (a) They will repel each other.
- o (b) They will attract each other.
- o (c) Nothing will happen.

If choice a is selected set score to 1.

44. What will happen, if two unlike charged bodies are positioned at close range of each other?

- o (a) They will repel each other.
- • (b) They will attract each other.
- o (c) Nothing will happen.

If choice b is selected set score to 1.

45. What will happen if a positive and a negative charged body are positioned at close range of each other?

- o (a) They will repel each other.
- • (b) They will attract each other.
- o (c) Nothing will happen.

If choice b is selected set score to 1.

46. Name a special precaution when working with an ESD sensitive device.

- o (a) Use static insertion and removal tools.
- • (b) Make use of low voltage soldering equipment.
- o (c) Make use of an area with a low relative air humidity.

If choice b is selected set score to 1.

47. The accumulated charge on a body is...

- o (a) is higher with a high relative humidity.
- • (b) is higher with a low relative humidity.
- o (c) independent of the relative humidity.

If choice b is selected set score to 1.

48. Which solid material is capable of conducting some electricity?

- • (a) Carbon
- o (b) Glass
- o (c) Wood

If choice a is selected set score to 1.

49. What medium is used in a cathode ray tube for its operation?

- o (a) Gas
- • (b) Vacuum
- o (c) Solid

If choice b is selected set score to 1.

50. A vacuum conducts by means of freely moving...

- o (a) positive and negative ions.
- o (b) electrons and positive ions.
- • (c) electrons.

If choice c is selected set score to 1.

51. A liquid conducts by means of freely moving...

- o (a) electrons and negative ions.
- • (b) positive and negative ions.
- o (c) electrons.

If choice b is selected set score to 1.

52. A gas conducts by means of freely moving...

- • (a) electrons and positive ions.
- o (b) electrons and negative ions.
- o (c) electrons.

If choice a is selected set score to 1.

53. A solid conducts by means of freely moving...

- o (a) electrons and positive ions.
- • (b) electrons.
- o (c) positive and negative ions.

If choice b is selected set score to 1.

54. What happens with the force between two charged bodies if the distance between them is doubled?

The force will...

- o (a) increase by a factor 2.
- o (b) decrease by a factor 2.
- • (c) decrease by a factor 4.

If choice c is selected set score to 1.

55. Two charged bodies are positioned at close range. The charge of one body is increased from 1 C to 2 C.

What will happen with the force between those two bodies?

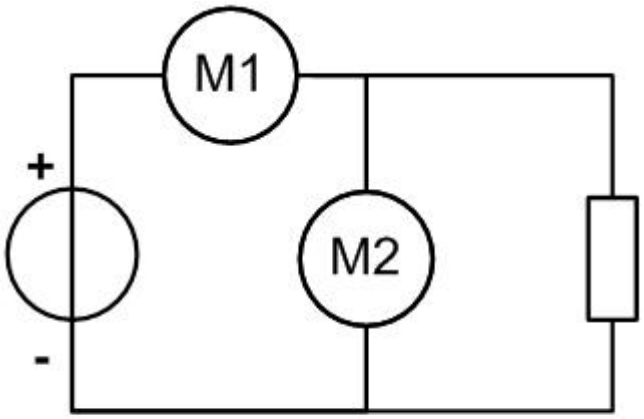
The force will...

- o (a) decrease by a factor 4.
- o (b) decrease by a factor 2.

- (c) increase by a factor 2.

If choice c is selected set score to 1.

56. Which units are measured by meter M1 and M2 in the diagram?



- (a) M1 is measuring current and M2 is measuring a voltage

o (b) M1 is measuring voltage and M2 is measuring a current
o (c) M1 is measuring current and M2 is measuring a current

If choice a is selected set score to 1.

57. A meter displays a value of 5V. Which magnitude is measured by this meter?

o (a) Current
o (b) Charge

- (c) Potential difference.

If choice c is selected set score to 1.

58. What is the formula according Ohm's law?

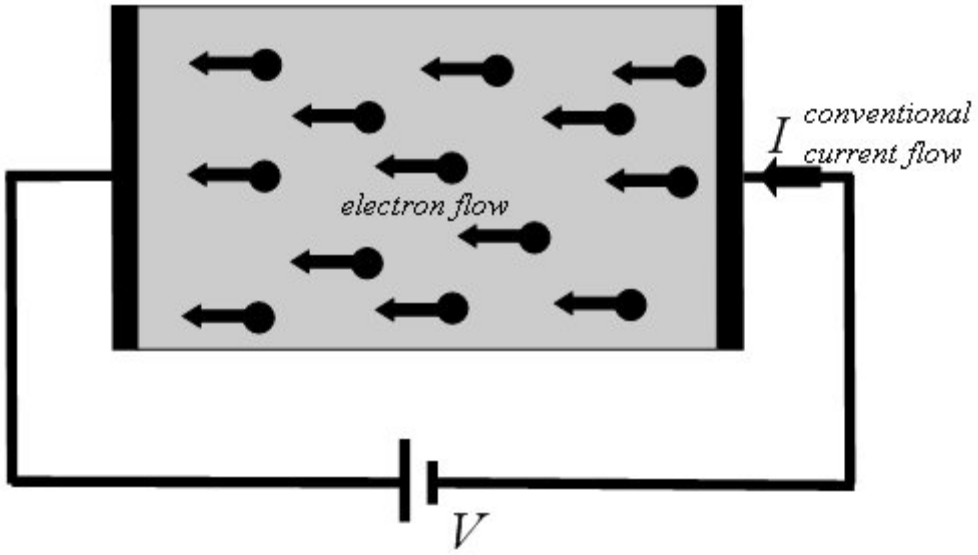
o (a) I= Q / t

- (b) R= U / I

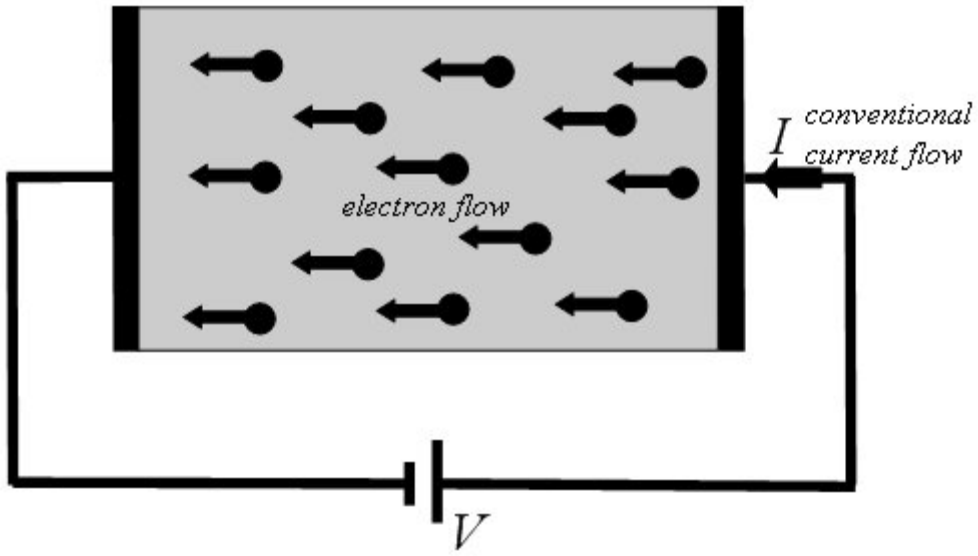
o (c) R= 1 / G

If choice b is selected set score to 1.

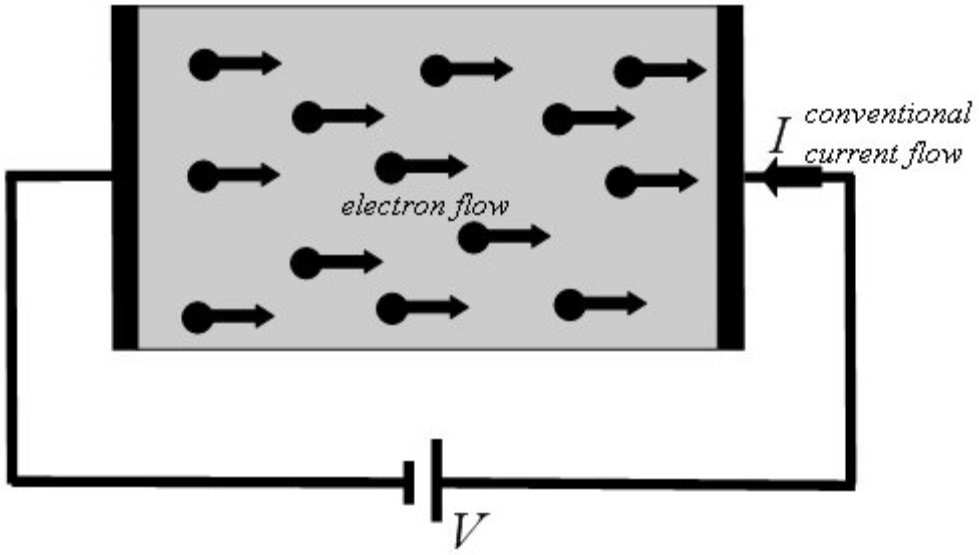
59. Which picture shows the right relation between electric current and electron current?



o (a)



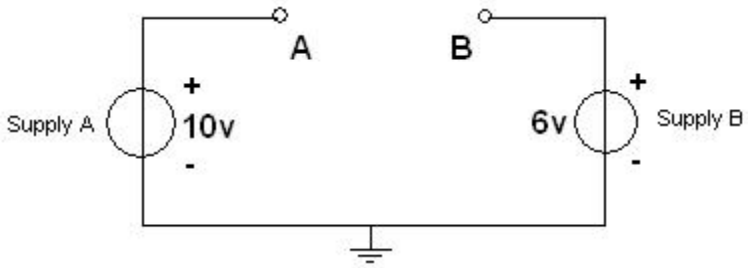
o (b)



- (c)

If choice c is selected set score to 1.

60. Which expression is correct for the electromotive force in the figure?

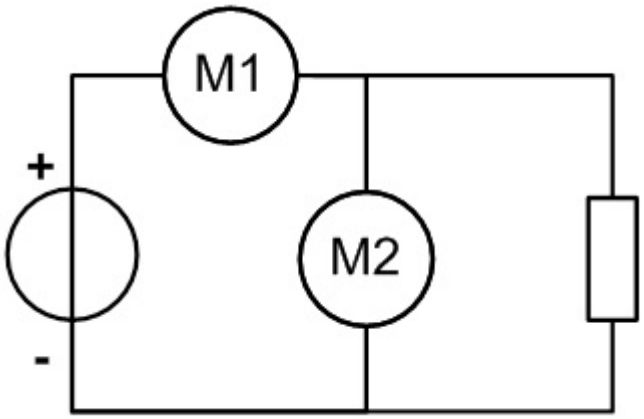


- (a) The electromotive force of terminal A is higher than the electromotive force of terminal B.

o (b) The electromotive force of terminal A is lower than the electromotive force of terminal B.
o (c) There is no electromotive force between terminal A & B.

If choice a is selected set score to 1.

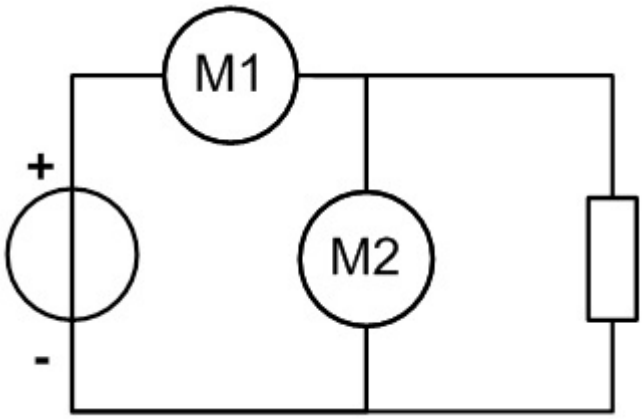
61. Which units are measured by meter M1 and M2 in the next figure?



- o (a) Both M1 and M2 are measuring current.
- o (b) M1 is measuring voltage and M2 is measuring current.
- • (c) M1 is measuring current and M2 is measuring voltage.

If choice c is selected set score to 1.

62. Which units are measured by meter M1 and M2 in the next figure?



- o (a) Both M1 and M2 are measuring voltage.
- • (b) M1 is measuring current and M2 is measuring voltage.
- o (c) M1 is measuring voltage and M2 is measuring current.

If choice b is selected set score to 1.

63. What happens to an electric current in a resistance if the applied voltage increases?

The electric current will...

- • (a) increase.

- o (b) decrease.
- o (c) not change.

If choice a is selected set score to 1.

64. What is the unit of electrical current?

- o (a) Volt
- • (b) Ampère
- o (c) Coulomb

If choice b is selected set score to 1.

65. An electric current will flow from a point with a....

- o (a) negative charge to a point with a positive charge.
- • (b) positive charge to a point with a negative charge.
- o (c) negative charge to a point with a positive charge or from a point with a positive charge to a point with a negative charge.

If choice b is selected set score to 1.

66. What happens to the conductance if the resistance of a conductor increases?

The conductance will...

- o (a) increase.
- • (b) decrease.
- o (c) be the same.

If choice b is selected set score to 1.

67. The resistance of a conductor depends on the...

- o (a) voltage across the conductor
- o (b) current through the conductor
- • (c) length of the conductor

If choice c is selected set score to 1.

68. What is the unit for conductance?

- o (a) C

- (b) S

o (c) Ω

If choice b is selected set score to 1.

69. To measure current, how is the amp-meter connected?

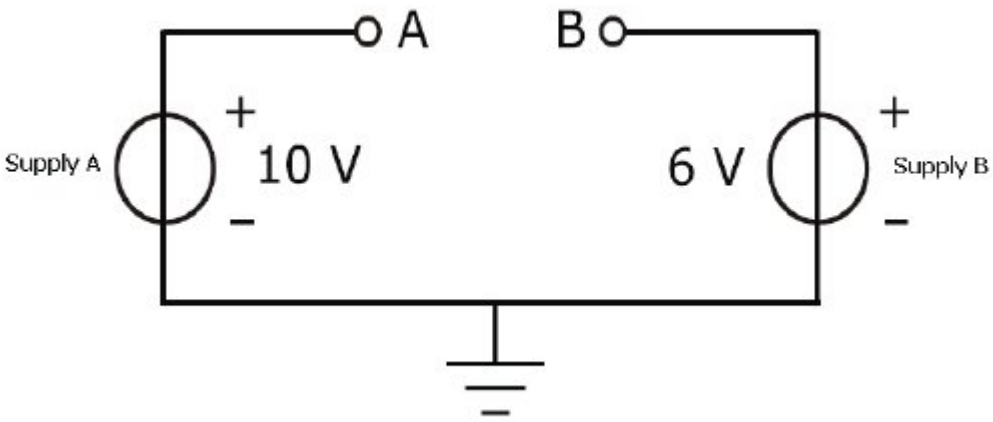
o (a) Parallel to the load through which the current flows.

- (b) In the wire in which the current has to be measured.

o (c) Parallel to the power source.

If choice b is selected set score to 1.

70. What is the potential difference at U_{AB} in the next figure?



- (a) 4 Volt

o (b) 16 Volt
o (c) -4 Volt

If choice a is selected set score to 1.

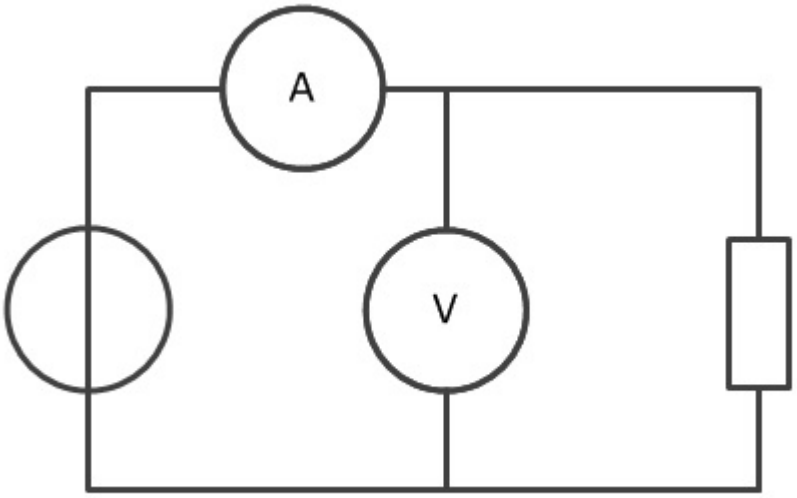
71. How is a voltmeter connected to measure a voltage?

o (a) In series with the load through which the current flows.
o (b) In series with the device of which the voltage has to be measured.

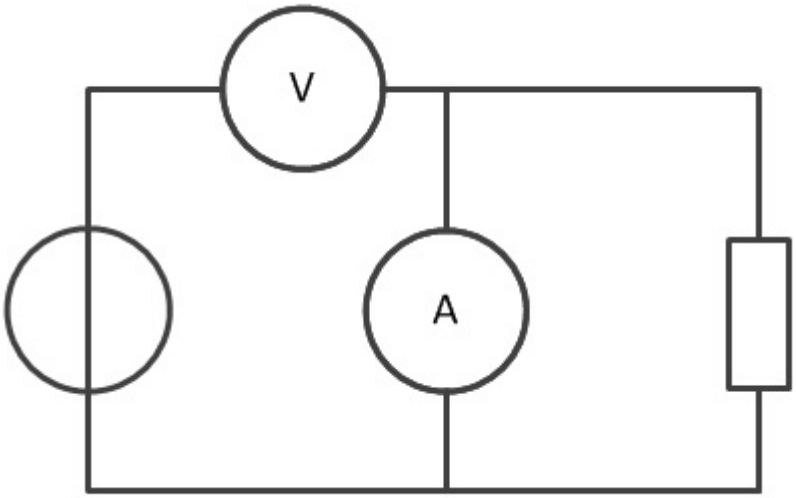
- (c) Connected between the two points of which the voltage has to be measured.

If choice c is selected set score to 1.

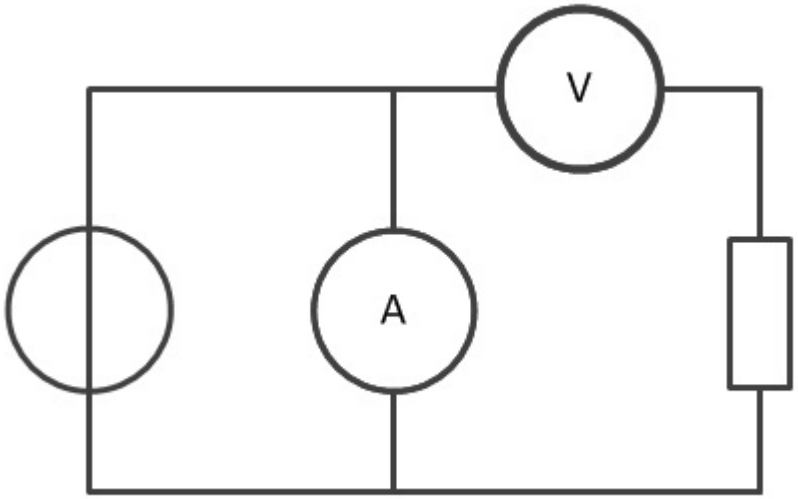
72. Which circuit diagram is correct for measuring the current in the load resistor?



- (a)



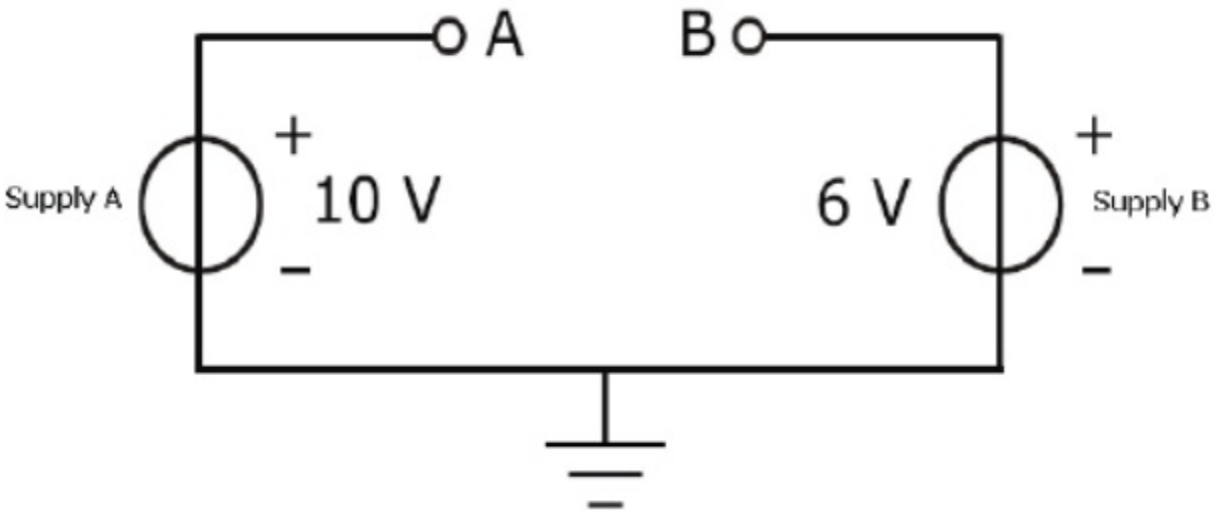
o (b)



o (c)

If choice a is selected set score to 1.

73. Calculate the potential difference between point B and point A in the next circuit diagram.



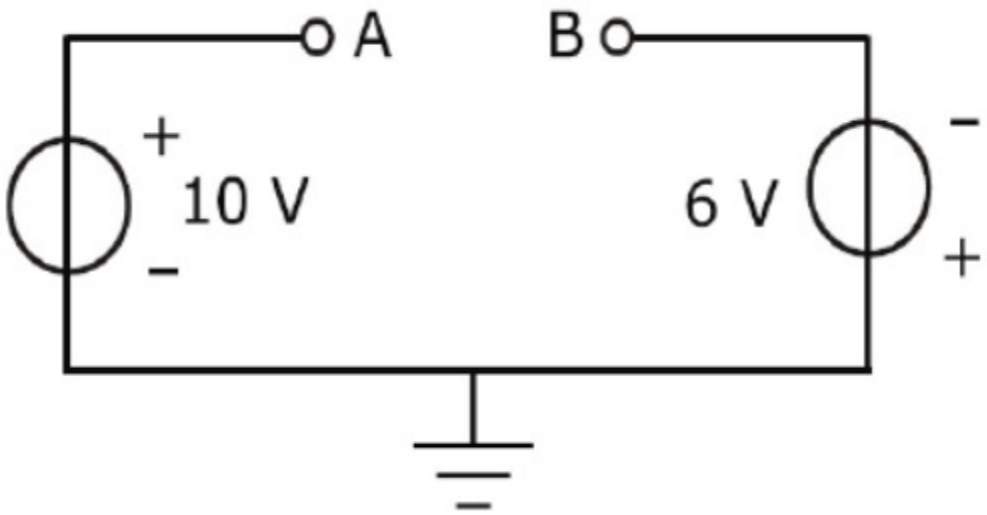
o (a) 16 V.

- (b) - 4 V.

o (c) 4 V.

If choice b is selected set score to 1.

74. Calculate the potential difference between point B and point A in the next circuit diagram.



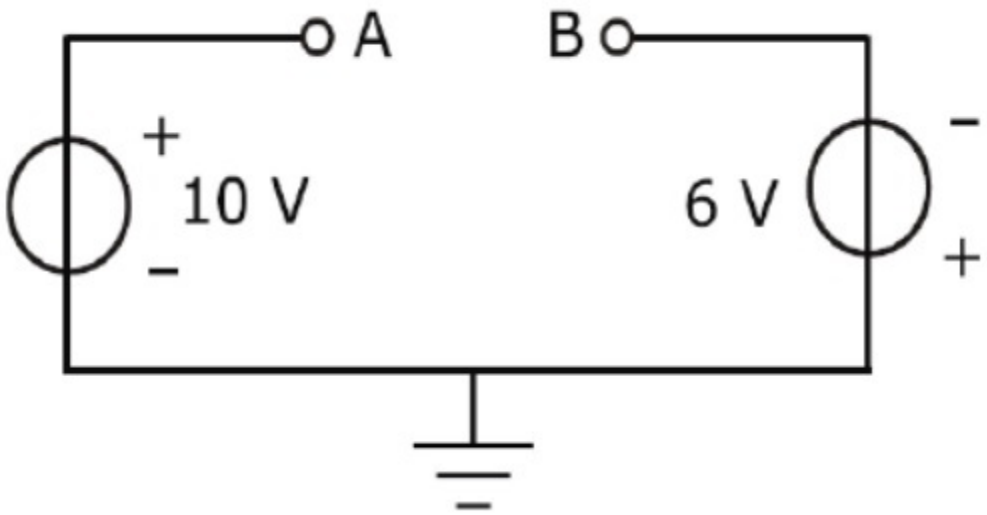
o (a) - 4 V.

• (b) - 16 V.

o (c) 4 V.

If choice b is selected set score to 1.

75. Calculate the potential difference between point A and point B in the next circuit diagram.



o (a) - 4 V.
o (b) 4 V.

- (c) 16 V.

If choice c is selected set score to 1.

76. The current flow from positive to negative charge is called?

- (a) Conventional flow.

o (b) Electron flow.
o (c) Static flow.

If choice a is selected set score to 1.

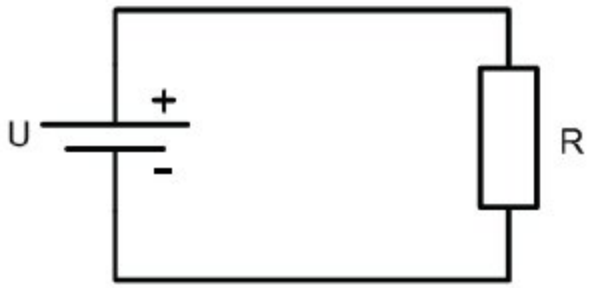
77. Conductance is:

- (a) the inverse of resistance.

o (b) expressed in Ohms.
o (c) the sum of all resistances in a circuit.

If choice a is selected set score to 1.

78. If the battery in the next figure supplies a voltage of 30 volt and the current flowing through the circuit is 2 ampere, what is the value of the resistor?



- (a) 15 Ohm

o (b) 60 Ohm
o (c) $^{1}/_{15}$ Ohm

If choice a is selected set score to 1.

79. During 2 minutes a charge of 120 Coulomb is passed through the conductor. What is the current in the conductor ?

o (a) 60 A

- (b) 1 A

- (c) 240 A

If choice b is selected set score to 1.

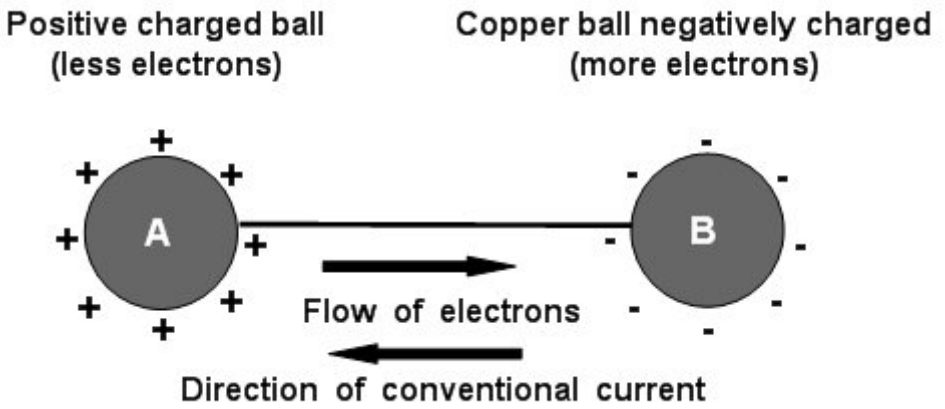
80. If a current of 2 A flows during 2 minutes through a conductor. Calculate the charge in the conductor.

- (a) 4 C
- (b) 1 C

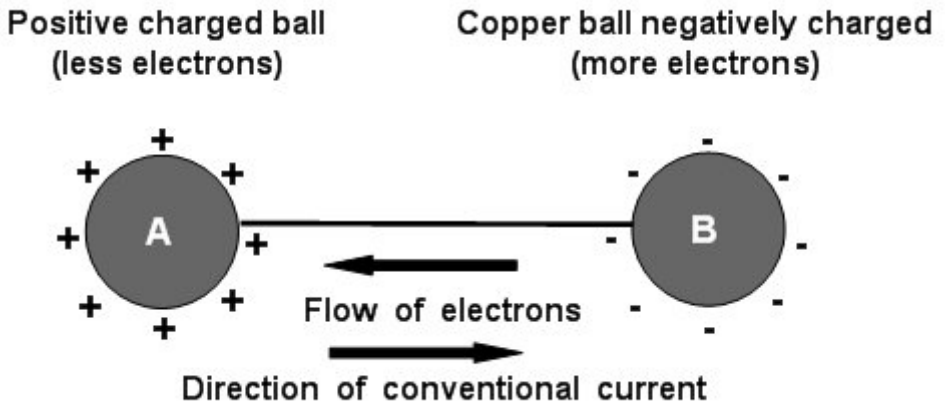
- (c) 240 C

If choice c is selected set score to 1.

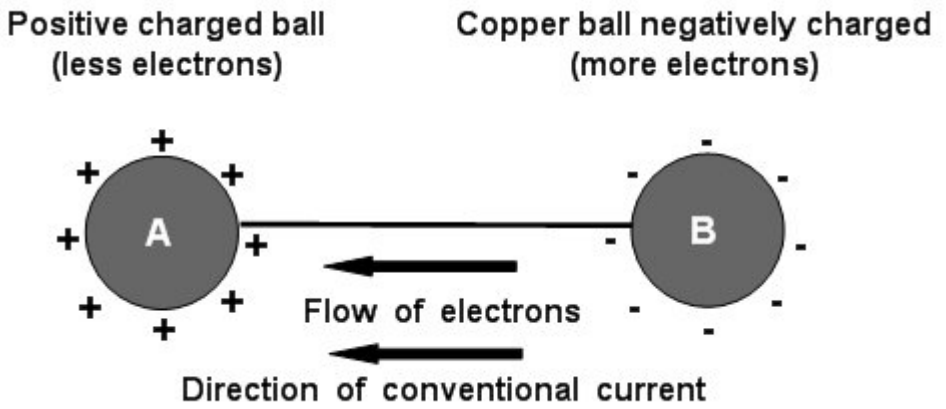
81. Which picture shows the right relationship between electric current and electron current?



- (a)



- (b)



o (c)

If choice b is selected set score to 1.

82. A resistor has a value of 10 Ω, what is the conductance of this resistor?

- (a) 0,1 S

o (b) 10 S
o (c) 1 S

If choice a is selected set score to 1.

83. A resistor has a conductance of 10 Siemens, what is the resistance of this resistor?

- (a) 0,1 Ω

o (b) 10 Ω
o (c) 1 Ω

If choice a is selected set score to 1.

84. Static electricity is produced by

o (a) Heat.
o (b) Pressure.

- (c) Friction.

If choice c is selected set score to 1.

85. A voltage, generated by magnetism is....

o (a) a combination of AC and DC voltage
o (b) a DC voltage

- (c) an AC voltage

If choice c is selected set score to 1.

86. What is the name for electricity produced by rubbing certain materials together?

- o (a) Piezo electricity.
- o (b) Thermo-electricity.
- • (c) Static electricity.

If choice c is selected set score to 1.

87. What is a fundamental condition for producing a voltage with magnetism?

- o (a) An electromagnet has to be used for voltage generation in the coil.
- • (b) There must be relative motion between a coil and a magnet.
- o (c) A load must be connected to the coil.

If choice b is selected set score to 1.

88. The piezoelectric effect is used for....

- o (a) temperature measurement
- o (b) light measurement
- • (c) generating high voltage

If choice c is selected set score to 1.

89. If a voltage is generated by piezoelectric effect this voltage is generated by....

- o (a) friction
- o (b) heat
- • (c) pressure

If choice c is selected set score to 1.

90. The potential between the two legs of a thermocouple depends on....

- • (a) the temperature and choice of metals
- o (b) choice of metals and pressure on the joint
- o (c) pressure on the joint and quantity of light

If choice a is selected set score to 1.

91. What is one of the advantages of a thermocouple compared with an ordinary thermometer?

- • (a) Possibility of measuring higher temperatures

- o (b) Accuracy
- o (c) Measuring temperatures over a longer distance

If choice a is selected set score to 1.

92. Solar cells are made of....

- • (a) semiconductor material
- o (b) rochelle salts
- o (c) electrolyte

If choice a is selected set score to 1.

93. Voltage produced by sunlight is called....

- • (a) photovoltaic conversion
- o (b) piezoelectric effect
- o (c) thermo-energy

If choice a is selected set score to 1.

94. A single solar cell produces an output voltage of 0,5 V. A higher voltage can obtained by connecting numerous cells....

- • (a) in series
- o (b) in series and parallel
- o (c) parallel

If choice a is selected set score to 1.

95. A single solar cell produces an output current of 0,1 A.

A higher current can be obtained by connecting numerous cells...

- o (a) in series.
- • (b) parallel.
- o (c) in series and parallel.

If choice b is selected set score to 1.

96. Electrolyte is used in a....

- o (a) thermocouple
- o (b) piezo crystal
- • (c) battery

If choice c is selected set score to 1.

97. A primary cell is....

- o (a) always a dry cell
- o (b) Rechargeable
- • (c) Not Rechargeable

If choice c is selected set score to 1.

98. A secondary cell is...

- o (a) not rechargeable.
- o (b) always a dry cell.
- • (c) rechargeable.

If choice c is selected set score to 1.

99. The electrolyte in a lead acid cell is....

- • (a) sulphuric acid
- o (b) hydrochloric acid
- o (c) water

If choice a is selected set score to 1.

100. When has the level of the electrolyte of a Nickel Cadmium battery to be checked?

- o (a) If the battery is completely discharged
- o (b) Before charging a new battery
- • (c) If the battery is completely charged

If choice c is selected set score to 1.

101. What is an advantage of a lead acid battery compared to a Nickel-Cadmium battery?

- o (a) Charging and discharging any number of times without any appreciable damage.
- • (b) Remains charged when stored for longer period.
- o (c) Low weight.

If choice b is selected set score to 1.

102. Several battery cells are connected in series. One of these cells is connected in opposite.

This cell will cause...

o (a) a higher output voltage.

• (b) a lower output voltage.

o (c) an increased overall capacity.

If choice b is selected set score to 1.

103. Why are battery cells connected in parallel?

To increase the output...

• (a) capacity.

o (b) voltage.
o (c) voltage and output capacity.

If choice a is selected set score to 1.

104. What will happen with the terminal voltage of a battery with an internal resistance if the output current of the battery increases?

The terminal voltage will....

o (a) increase.
o (b) remain the same.

• (c) decrease.

If choice c is selected set score to 1.

105. What will happen with the terminal voltage of an off loaded battery when the internal resistance is increased?

The terminal voltage will....

• (a) not be affected.

o (b) be decreased.
o (c) be increased.

If choice a is selected set score to 1.

106. What is a thermopile?

A couple of thermocouples connected....

o (a) in series and parallel.

- (b) in series.

o (c) parallel.

If choice b is selected set score to 1.

107. Which kind of thermocouple is normally used in airplanes?

- (a) Nickel/Chromium

o (b) Copper/Constantan
o (c) Iron/Constantan

If choice a is selected set score to 1.

108. What is an application of a photocell in aircraft?

o (a) Emergency power supply
o (b) Altitude sensor

- (c) Smoke detector

If choice c is selected set score to 1.

109. If a photoelectric device is exposed to light energy, this device will undergo a photo-emission. What will happen in this device due to the light?

Emission of light causes....

o (a) a change in resistance.
o (b) the production of voltage.

- (c) emission of electrons.

If choice c is selected set score to 1.

110. If a photoelectric device is exposed to light, energy of this device will undergo photo-conduction. What will happen in this device due to the light?

The light causes....

o (a) emission of electronics.
o (b) the production of a voltage.

- (c) a change in resistance.

If choice c is selected set score to 1.

111. If a photoelectric device is exposed to light, energy of this device will undergo a photo-voltaic effect. What will happen in this device due to the light?

The light causes....

- (a) the production of a voltage.

o (b) emission of electrons.
o (c) a change in resistance.

If choice a is selected set score to 1.

112. In which type of cell does chemical action eat away the electrode?

- (a) Primary cell.

o (b) Lead-Acid cell.
o (c) Secondary cell.

If choice a is selected set score to 1.

113. What is the effect of hydrogen bubbles forming on the surface of the cathode?

The cell....

- (a) output voltage decreases.

o (b) heats up.
o (c) discharges more quickly.

If choice a is selected set score to 1.

114. To restore a secondary cell to its original condition, what must be done?

o (a) Replace the electrodes.
o (b) Replace the electrolyte.

- (c) Force an electric current through the cell, opposite of the discharge current.

If choice c is selected set score to 1.

115. When connecting cells in series, what happens to the total output?

o (a) The total voltage and overall capacity increases.
o (b) The overall capacity increases while the total voltage remains the same.

- (c) The total voltage increases while the overall capacity remains the same.

If choice c is selected set score to 1.

116. Which of the following photo-cells are also called solar cells?

- (a) Photo-voltaic cells.

o (b) Photo-conducting cells.
o (c) Photo-emitting cells.

If choice a is selected set score to 1.

117. What is the primary characteristic of a thermocouple?

o (a) Its internal resistance increases as it is heated up.

- (b) It produces a current proportional to it being heated up.

o (c) Its internal resistance decreases the more it is heated up.

If choice b is selected set score to 1.

118. The sum of voltage drops of a serial resistor circuit will equal the total....

o (a) circuit current.

- (b) supply voltage.

o (c) circuit resistance.

If choice b is selected set score to 1.

119. Ohm's law shows a relationship between;

o (a) Current and resistance only.
o (b) Voltage and resistance only.

- (c) Current, voltage and resistance.

If choice c is selected set score to 1.

120. When the resistance in a circuit is decreased under a constant supply voltage, the current will....

o (a) decrease.

- (b) increase.

o (c) be constant.

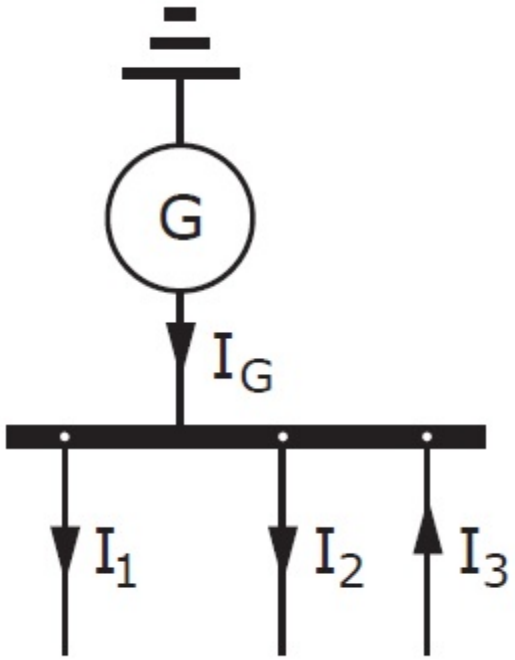
If choice b is selected set score to 1.

121. Ohm's law holds for circuits with resistive element when the supply voltage is....

- o (a) Direct Current (DC).
- • (b) both Direct and Alternating Current (DC and AC).
- o (c) Alternating Current (AC).

If choice b is selected set score to 1.

122. The generator delivers a current of 100 A. I_1=20A; I_2 = 90A.

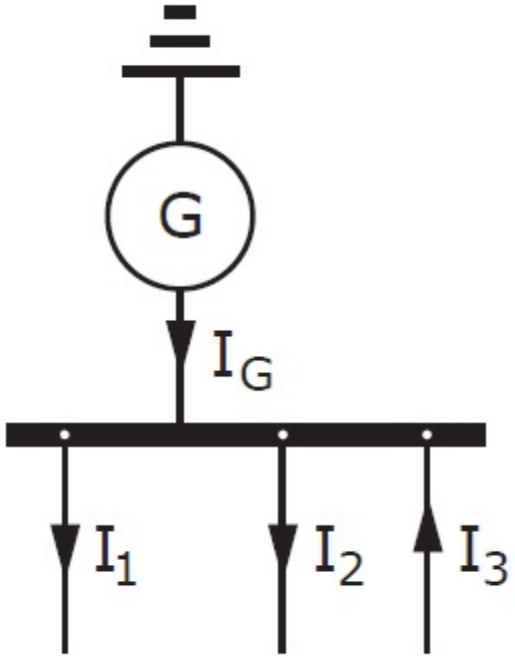


Calculate current I_3.

- o (a) I_3 = -10A.
- o (b) I_3 = 210 A.
- • (c) I_3 = 10 A.

If choice c is selected set score to 1.

123. Given: I_1 = 20A; I_2 = 90A and I_3 = 10A.



Calculate the current delivered by the generator.

o (a) I_G = 80A.

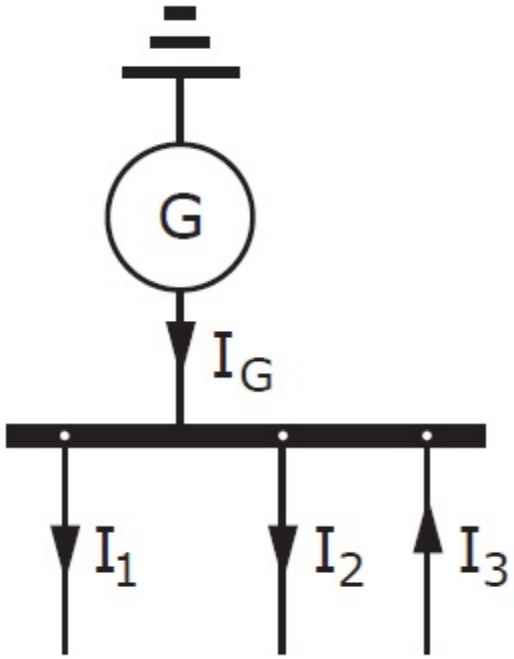
• (b) I_G = 100A.

o (c) I_G = 120A.

If choice b is selected set score to 1.

124. The generator delivers a current of 100A.

I_1=20A, I_2=70A.



Calculate current I_3.

- (a) I_3= -10A.

o (b) I_3= 10A.
o (c) I_3= 210A.

If choice a is selected set score to 1.

125. In a circuit with 2 serial resistors (A and B), the voltage drop of resistor A is 4 volt. The supply voltage is 12 Volt. The voltage drop of resistor B is:

o (a) 48 Volt
o (b) 16 Volt

- (c) 8 Volt

If choice c is selected set score to 1.

126. For a given circuit, the circuit current is 2 ampere. The load resistance is 6 Ohm. The supply voltage is;

o (a) $^1/_3$ Volt

- (b) 12 Volt

o (c) 3 Volt

If choice b is selected set score to 1.

127. For a given circuit, the supply voltage is 7 Volt DC. The load resistance is 14 Ohm. The circuit current is....

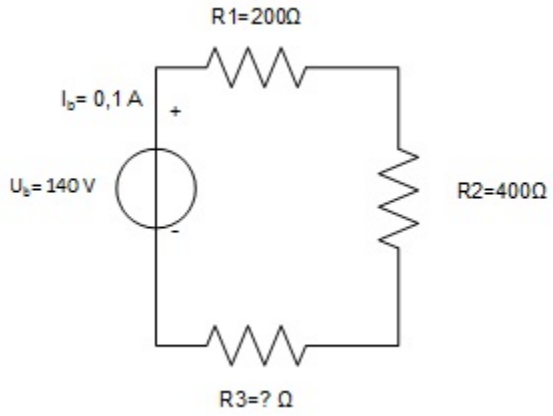
o (a) 2 A

• (b) 0,5 A

o (c) 98 A

If choice b is selected set score to 1.

128. In the next picture, calculate the value of R_3.

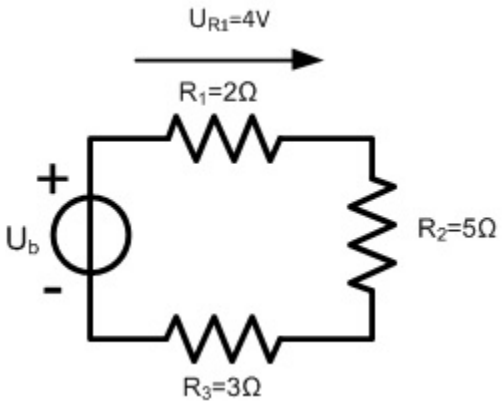


• (a) R_3= 800 Ω

o (b) R_3= 1000 Ω
o (c) R_3= 200 Ω

If choice a is selected set score to 1.

129. Calculate the total supply voltage U_b in the next picture.



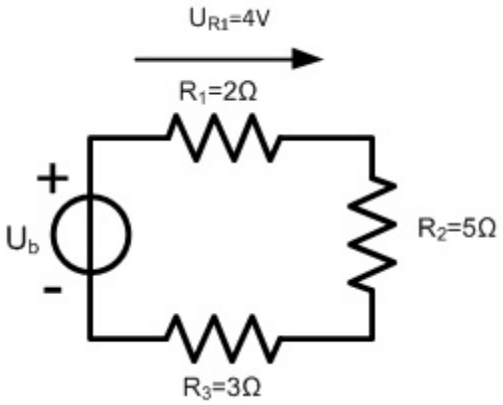
o (a) U_b= 8 V

• (b) U_b= 20 V

o (c) U_b= 12 V

If choice b is selected set score to 1.

130. Calculate the current in R_3 in the next picture.

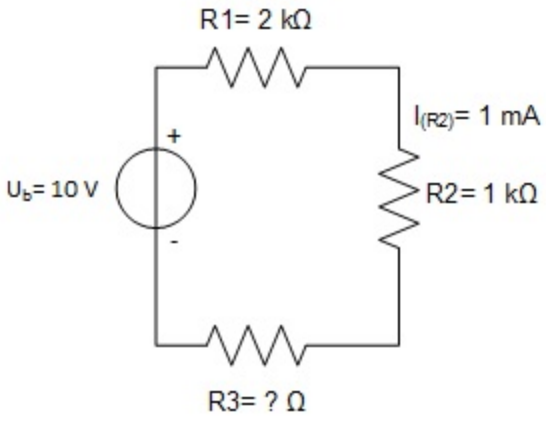


• (a) $I_{(R3)}$= 2 A

o (b) $I_{(R3)}$= 6 A
o (c) $I_{(R3)}$= 0,5 A

If choice a is selected set score to 1.

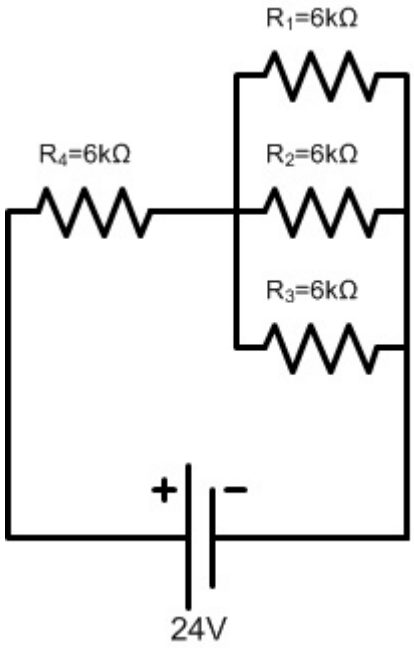
131. Calculate the value of R_3 in the next picture.



- o (a) R_3 = 1 kΩ
- • (b) R_3 = 7 kΩ
- o (c) R_3 = 5 kΩ

If choice b is selected set score to 1.

132. Calculate the current in R_4 in the next picture.

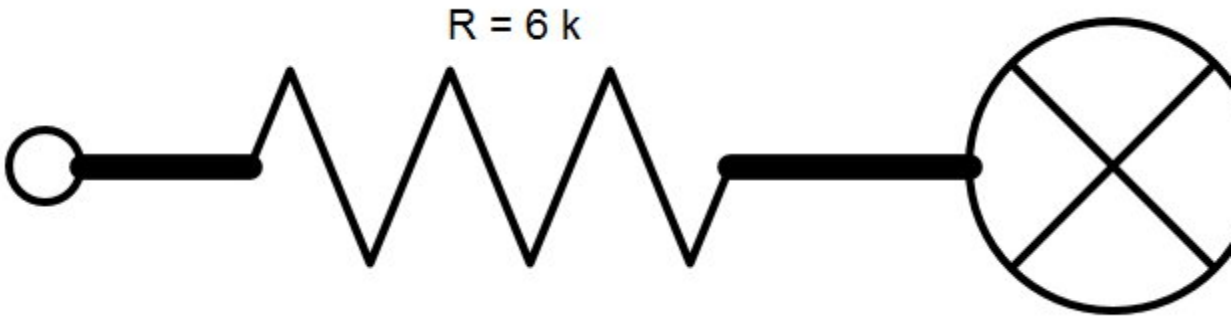


- o (a) $I_{(R4)}$= 4 mA
- • (b) $I_{(R4)}$= 3 mA
- o (c) $I_{(R4)}$= 1 mA

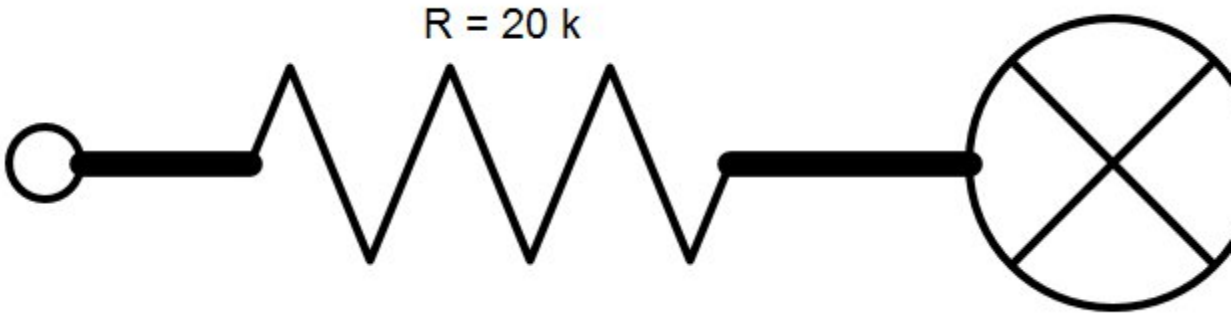
If choice b is selected set score to 1.

133. Which resistor has the highest voltage drop?

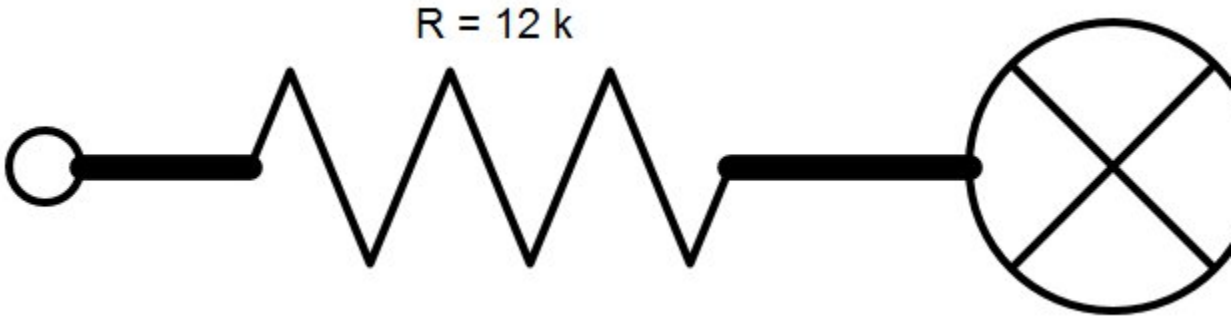
o (a)



- (b)

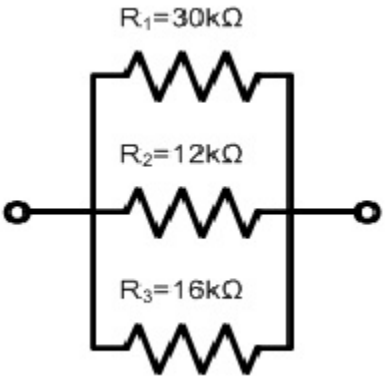


o (c)



If choice b is selected set score to 1.

134. In which resistor is the current flow the lowest?

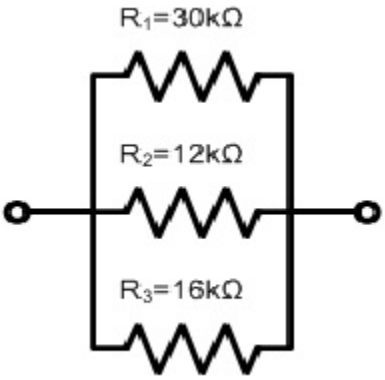


- (a) R_1

o (b) R_3
o (c) R_2

If choice a is selected set score to 1.

135. In which resistor is the current flow the highest?



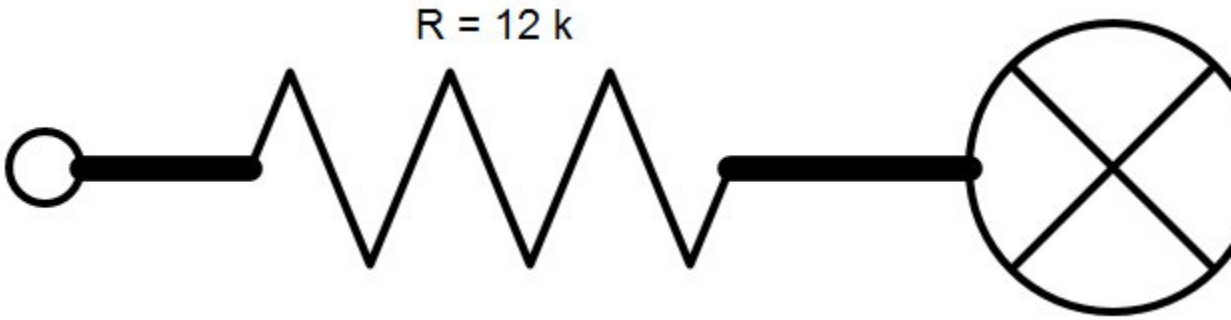
o (a) R_1
o (b) R_3

- (c) R_2

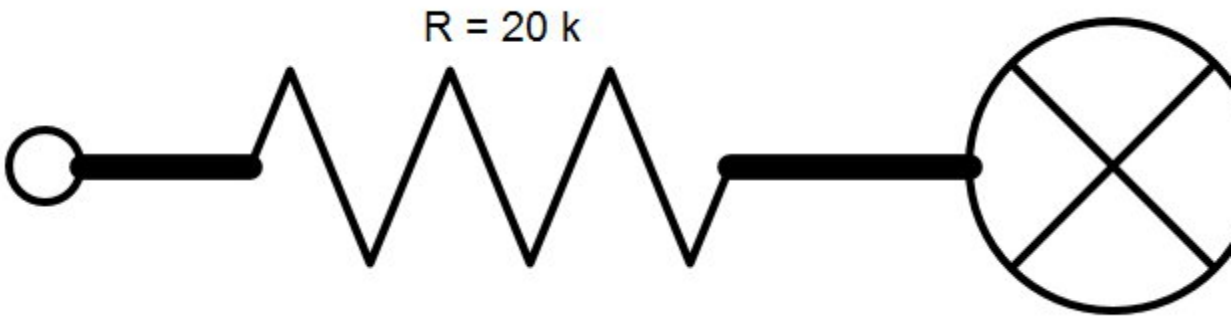
If choice c is selected set score to 1.

136. Which resistor has the highest voltage drop?

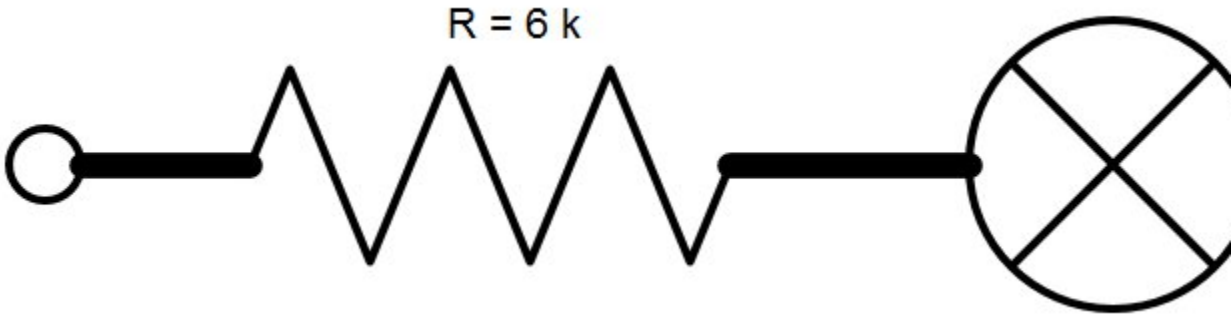
o (a)



o (b)



• (c)



If choice c is selected set score to 1.

137. The effect of the source internal resistance is low when....

o (a) the circuit load resistance is low.
o (b) the source voltage is low.

• (c) the circuit load resistance is high.

If choice c is selected set score to 1.

138. The EMF (Electromotive Force) of a source is 12 Volt. The internal source resistance is 2 ohm. The circuit load resistance is 4 ohm.

The circuit current is....

o (a) 6 A

• (b) 2 A

o (c) 3 A

If choice b is selected set score to 1.

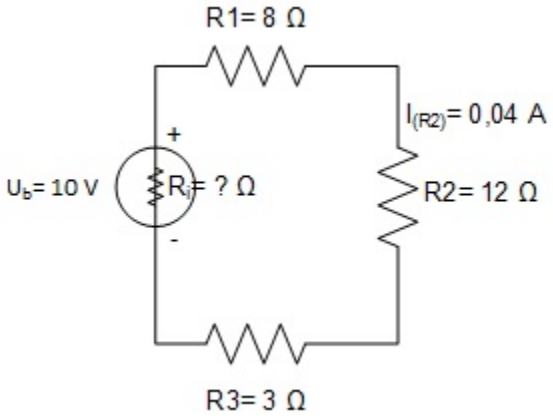
139. When shortening a voltage source, the circuit current depends on the source....

o (a) voltage only.
o (b) voltage and the source internal resistance.

• (c) internal resistance.

If choice c is selected set score to 1.

140. Calculate the internal resistance of this voltage source.



• (a) R_i = 2 Ω

o (b) R_i = 0,5 Ω
o (c) R_i = 0 Ω

If choice a is selected set score to 1.

141. The EMF of a voltage source is 10 V. The internal resistance of this source is 1 Ω. A load resistance is connected to the terminals.

What happens with the terminal voltage if the load resistance increases?

The terminal voltage will...

o (a) not change.
o (b) decrease.

- (c) increase.

If choice c is selected set score to 1.

142. The EMF of a voltage source is 10 V. The internal resistance of this source is 1 Ω. A load resistance is connected to the terminals.

What happens with the terminal voltage if the load resistance decreases?

The terminal voltage will...

o (a) not change.
o (b) increase.

- (c) decrease.

If choice c is selected set score to 1.

143. The EMF of an ideal voltage source is 10 V. A load resistance is connected on the terminals.

What happens with the terminal voltage if the load resistance decreases?

The terminal voltage will...

o (a) decrease.
o (b) increase.

- (c) not change.

If choice c is selected set score to 1.

144. The EMF of an ideal voltage source is 10 V. A load resistance is connected on the terminals.

What happens with the terminal voltage if the load resistance increases?

The terminal voltage will...

o (a) decrease.

- (b) not change.

o (c) increase.

If choice b is selected set score to 1.

145. The EMF of a voltage source is 12 V. The internal resistance is 2 Ω. The load resistance is 4 Ω.

Calculate the terminal voltage.

o (a) 4 V
o (b) 12 V

- (c) 8 V

If choice c is selected set score to 1.

146. The EMF of a voltage source is 12 V. The internal resistance is 2 Ω. The load resistance is 4 Ω.

Calculate the voltage drop across the internal resistance.

- (a) 4 V

o (b) 12 V
o (c) 8 V

If choice a is selected set score to 1.

147. The EMF of a voltage source is 12 V. The internal resistance is 2 Ω. The load resistance is 4 Ω.

Determine the unloaded terminal voltage.

o (a) 8 V

- (b) 12 V

o (c) 4 V

If choice b is selected set score to 1.

148. The colour code on a resistor indicates the....

o (a) resistance value.
o (b) tolerance of the resistor value.

- (c) resistance value and tolerance of the resistor value.

If choice c is selected set score to 1.

149. The resistance of a wire is;

o (a) Inverse proportional to the wire length.

- (b) Proportional to the wire cross sectional area.

- (c) Inverse proportional to the wire cross sectional area.

If choice c is selected set score to 1.

150. What happens with the resistance of a wire if the length of the wire increases?

The resistance of the wire will...

- (a) increase.

- (b) decrease.
- (c) not change.

If choice a is selected set score to 1.

151. What happens with the resistance of a wire if the length of the wire decreases?

The resistance of the wire will...

- (a) not change.
- (b) increase.

- (c) decrease.

If choice c is selected set score to 1.

152. What happens with the resistance of a wire if the cross sectional area of the wire decreases?

The resistance of the wire will...

- (a) decrease.
- (b) not change.

- (c) increase.

If choice c is selected set score to 1.

153. What happens with the resistance of a wire if the cross sectional area of the wire increases?

The resistance of the wire will...

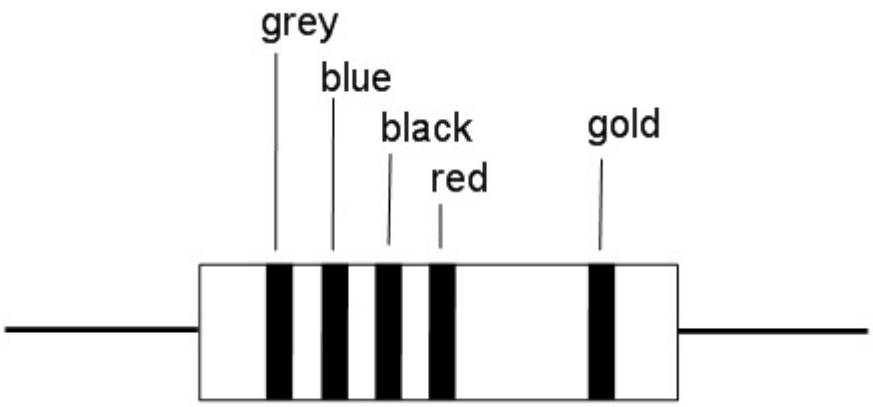
- (a) increase.

- (b) decrease.

- (c) not change.

If choice b is selected set score to 1.

154. What is the value of the resistor?

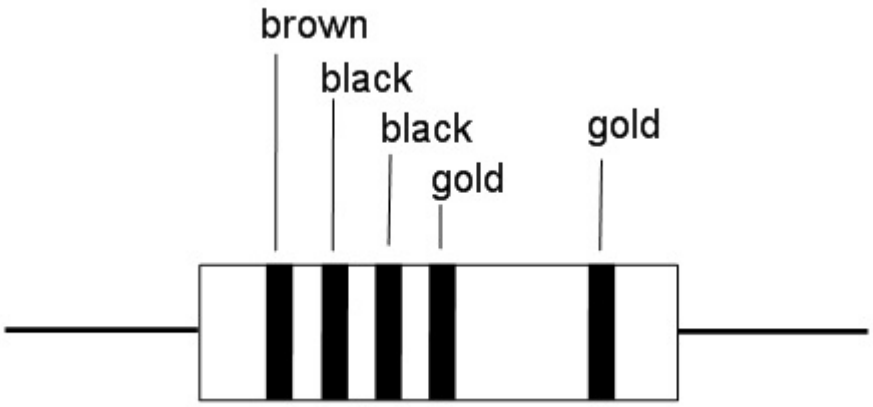


- (a) 86 kΩ.

o (b) 86,3 kΩ.
o (c) 8,63 kΩ.

If choice a is selected set score to 1.

155. What is the value of the resistor?



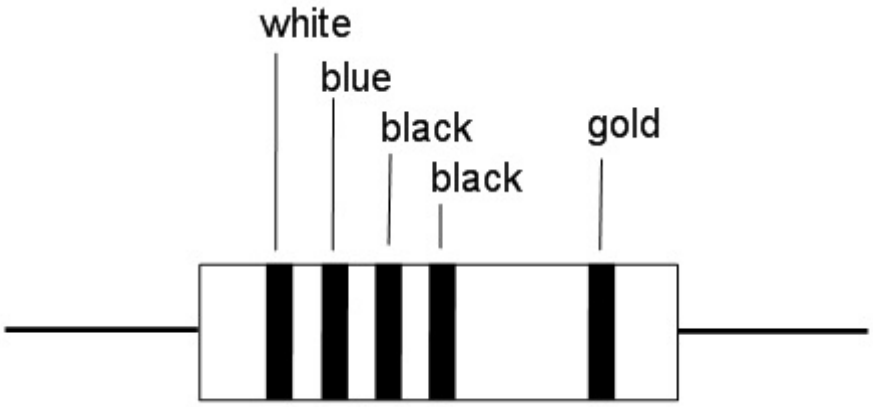
o (a) 100 Ω.

- (b) 10 Ω.

o (c) 1001 Ω.

If choice b is selected set score to 1.

156. What is the value of the resistor?



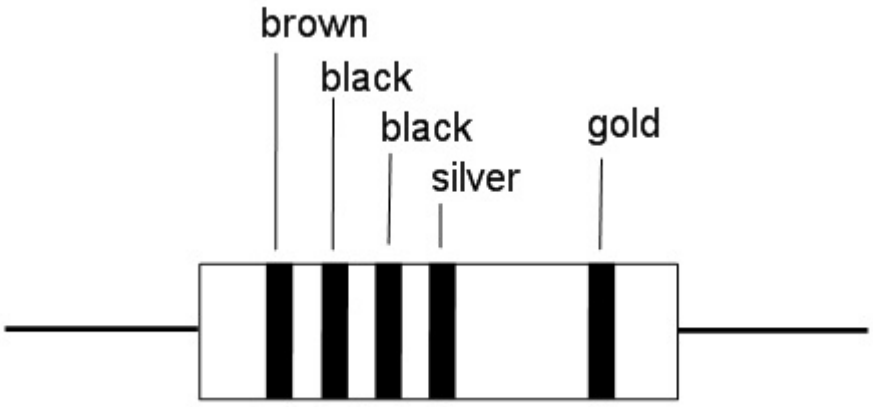
o (a) 96,1 Ω.

• (b) 960 Ω.

o (c) 961 Ω.

If choice b is selected set score to 1.

157. What is the value of the resistor?



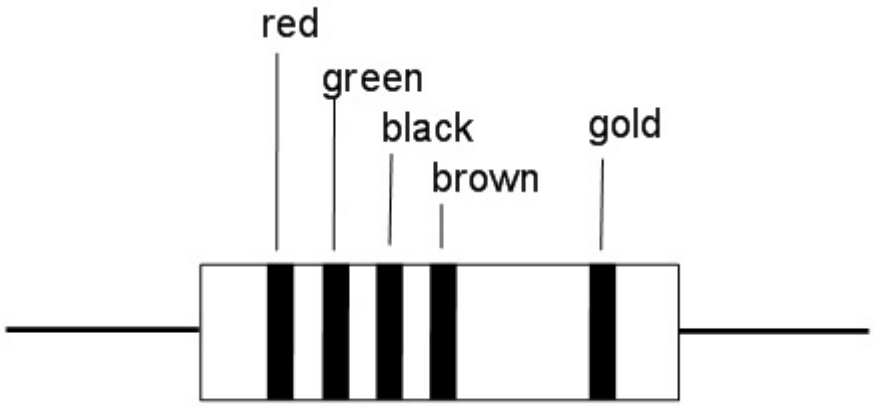
o (a) 100 Ω.

• (b) 1 Ω.

o (c) 10 Ω.

If choice b is selected set score to 1.

158. What is the value of the resistor?



o (a) 252 Ω.

• (b) 2k5 Ω.

o (c) 25200 Ω.

If choice b is selected set score to 1.

159. What is the value of the resistor coded 2k7?

o (a) 27 kΩ.

• (b) 2700 Ω.

o (c) 270 Ω.

If choice b is selected set score to 1.

160. What is the unit of specific resistance?

o (a) Ohm-meter (Ωm).
o (b) Meter per Ohm (m/Ω).

• (c) Ohm per meter (Ω/m).

If choice c is selected set score to 1.

161. If the power dissipated in a resistor is over 25 W, which kind of material is used to produce this resistor?

o (a) Carbon.
o (b) Glass.

• (c) Wire.

If choice c is selected set score to 1.

162. Five (5) resistors which have the same value of 50 Ohms are connected parallel. What is the total resistance value of that circuit?

- (a) 10 Ohms

o (b) 50 Ohms
o (c) 250 Ohms

If choice a is selected set score to 1.

163. When resistors are connected in series, the current in that circuit depends on?

o (a) The difference between the highest and lowest resistor value.

- (b) The sum of the resistor values and the supply voltage.

o (c) The flow direction of the current in that circuit.

If choice b is selected set score to 1.

164. When resistors are connected parallel, the circuit resistance...

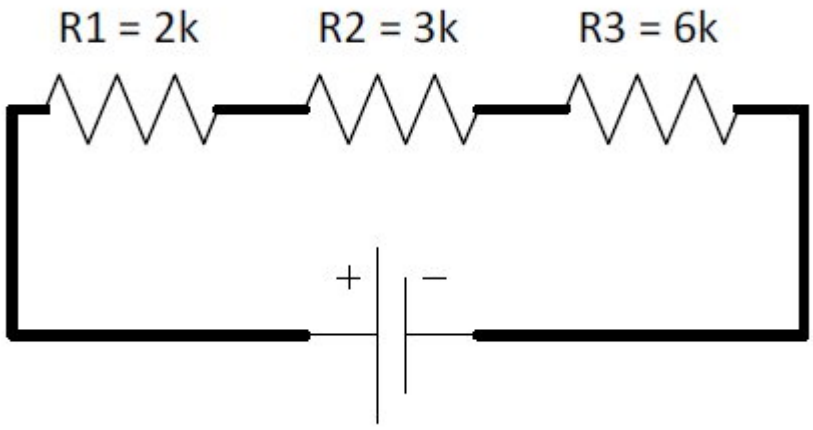
o (a) stays constant

- (b) decreases

o (c) increases

If choice b is selected set score to 1.

165. What is the total resistance of this circuit?



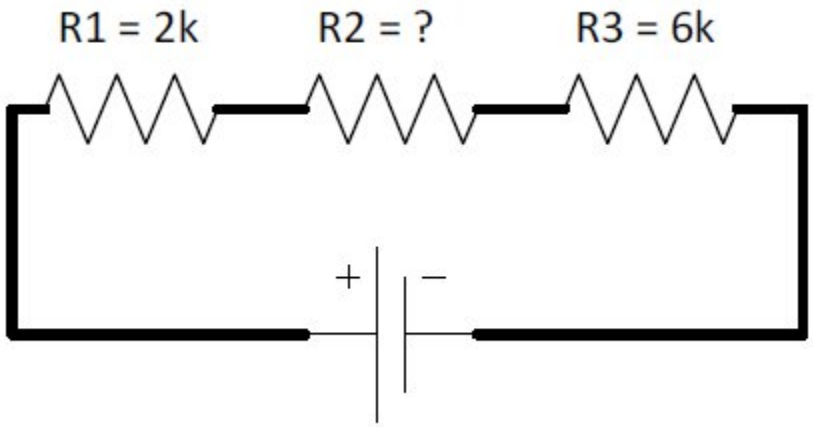
- (a) 11 kΩ.

o (b) 36 kΩ.

o (c) 1 kΩ.

If choice a is selected set score to 1.

166. The total resistance of this circuit is 10 kΩ. Calculate the value of R_2.

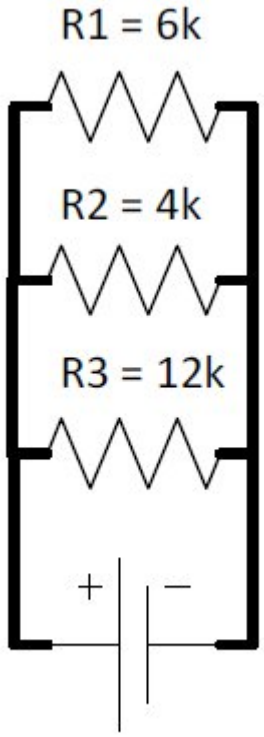


- (a) 2 kΩ.

o (b) 1 kΩ.
o (c) 4 kΩ.

If choice a is selected set score to 1.

167. What is the total resistance of this circuit?

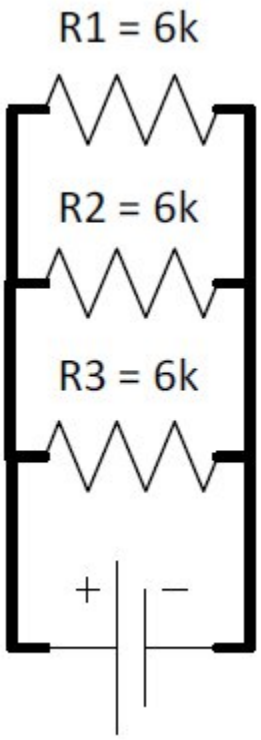


- (a) 2 kΩ.

o (b) 0,5 kΩ.
o (c) 24 kΩ.

If choice a is selected set score to 1.

168. What is the total resistance of this circuit?

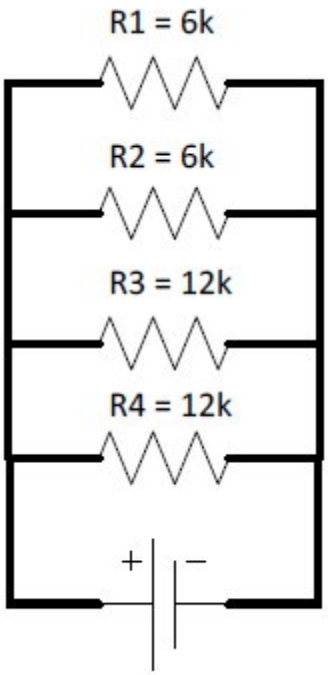


- (a) 2 kΩ.

o (b) 24 kΩ.
o (c) 0,5 kΩ.

If choice a is selected set score to 1.

169. What is the total resistance of this circuit?

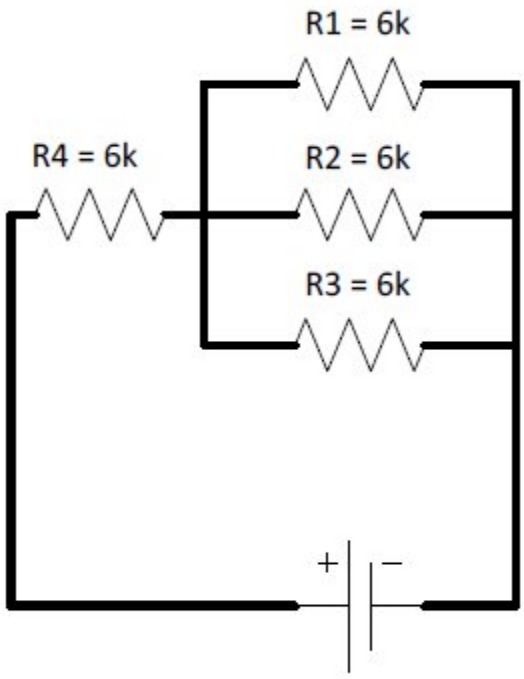


o (a) 0,5 kΩ.
o (b) 36 kΩ.

- (c) 2 kΩ.

If choice c is selected set score to 1.

170. What is the total resistance of this circuit?

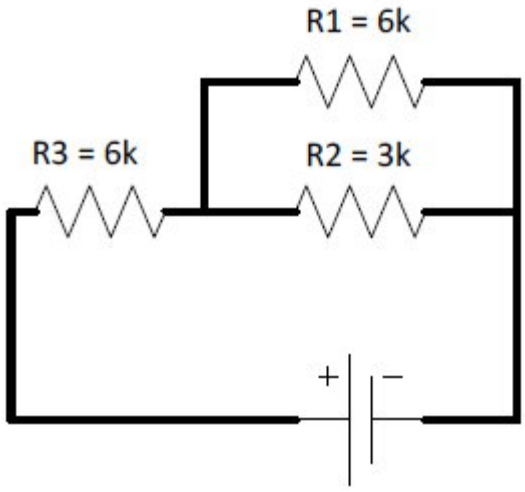


- (a) 24 kΩ.
- (b) 1,5 kΩ.

- (c) 8 kΩ.

If choice c is selected set score to 1.

171. What is the total resistance of this circuit?

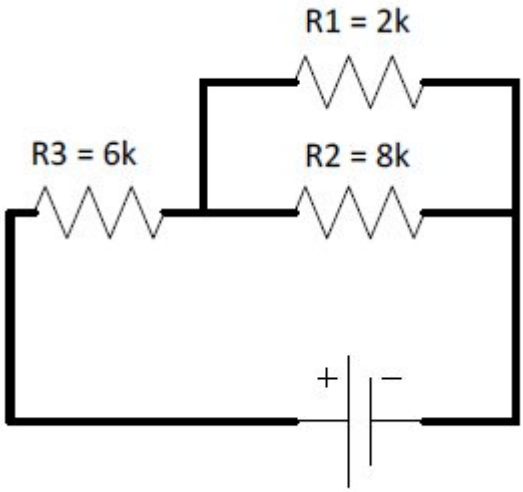


- (a) 8 kΩ.

- (b) 15 kΩ.
- (c) $^{5}/_{18}$ kΩ.

If choice a is selected set score to 1.

172. What is the total resistance of this circuit?

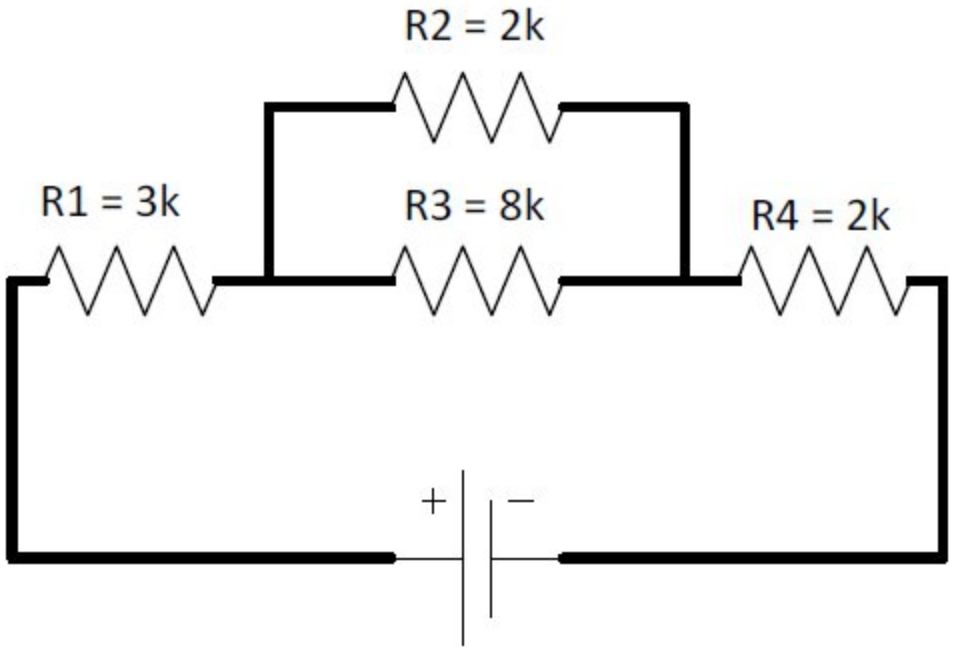


- (a) 16 kΩ.
- (b) 6 $^{5}/_{8}$ kΩ.

- (c) 7,6 kΩ.

If choice c is selected set score to 1.

173. What is the total resistance of this circuit?



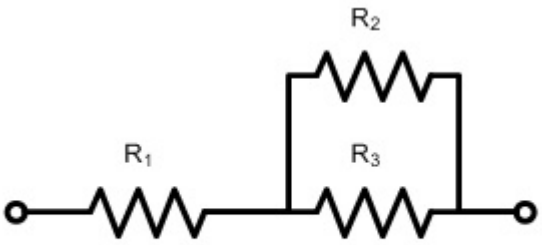
- (a) 6,6 kΩ.

o (b) $5\ ^{5}/_{8}$ kΩ.
o (c) 15 kΩ.

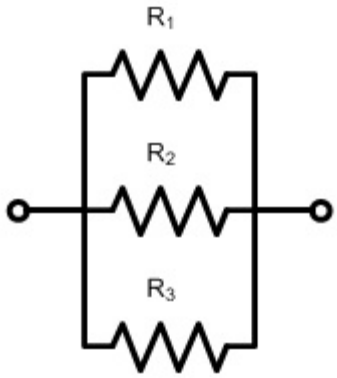
If choice a is selected set score to 1.

174. The resistors in the circuits below have the same value.

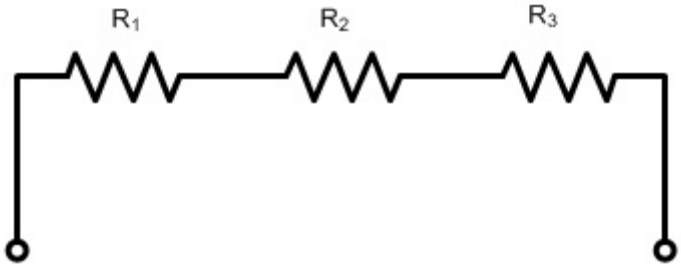
In which circuit is the total resistance the lowest?



o (a)



- (b)

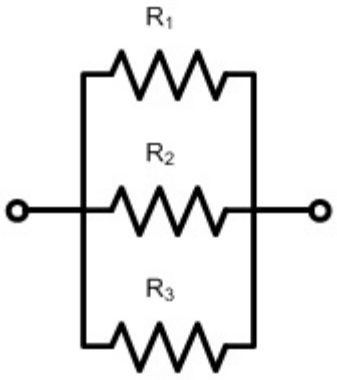


o (c)

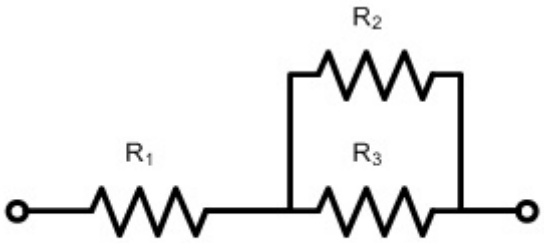
If choice b is selected set score to 1.

175. The resistors in the circuits below have the same value.

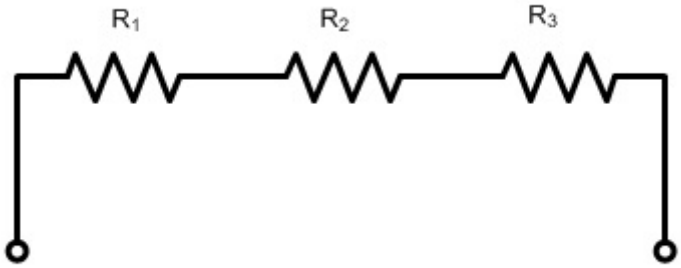
In which circuit is the total resistance the highest?



o (a)



o (b)



- (c)

If choice c is selected set score to 1.

176. A Wheatstone bridge is a circuit with....

o (a) 4 resistors connected in series.

- (b) 4 resistors, in 2 parallel branches and each branch with 2 resistors in series.

o (c) 4 resistors connected in parallel.

If choice b is selected set score to 1.

177. Calculate the maximum current in a 2 Ω ; 8 Watt resistor.

- (a) 2 A.

o (b) 4 A.
o (c) 16 A.

If choice a is selected set score to 1.

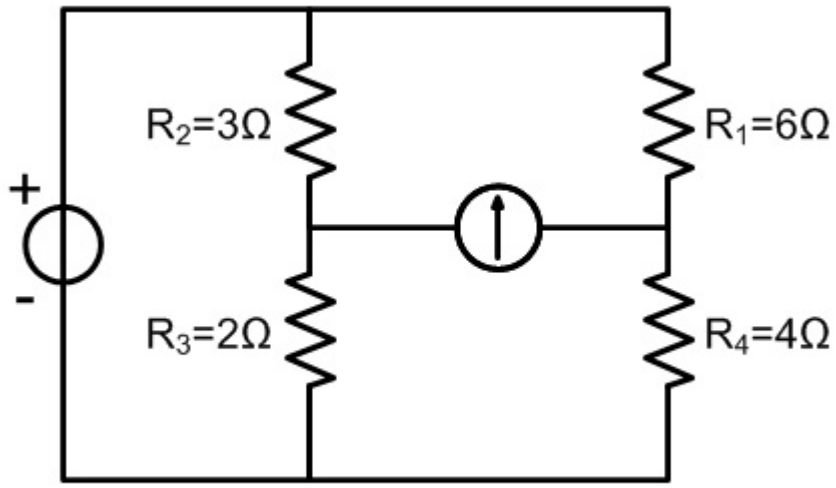
178. Calculate the maximum voltage across a 3 Ω ; 3 Watt resistor.

o (a) 9 V.
o (b) 1 V.

- (c) 3 V.

If choice c is selected set score to 1.

179. Is this bridge of Wheatstone balanced?

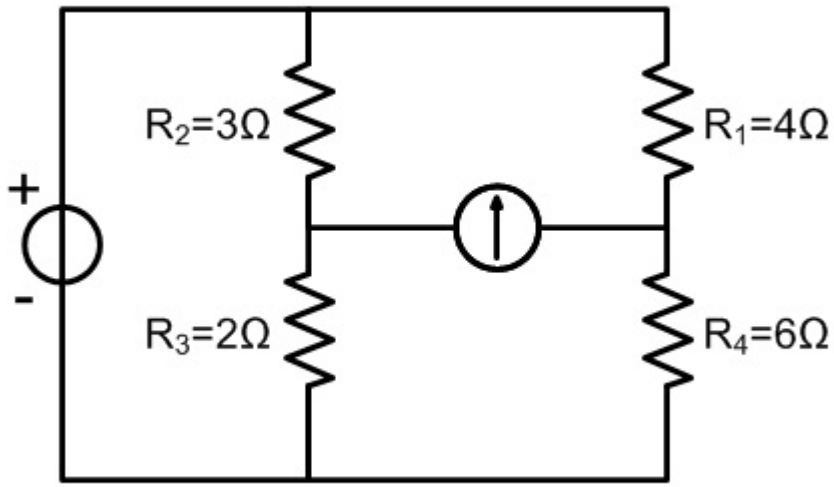


o (a) No, the bridge is not in balance.
o (b) There is not enough information available to estimate whether the bridge is in balance or not.

- (c) Yes, the bridge is in balance.

If choice c is selected set score to 1.

180. Is this bridge of Wheatstone balanced?



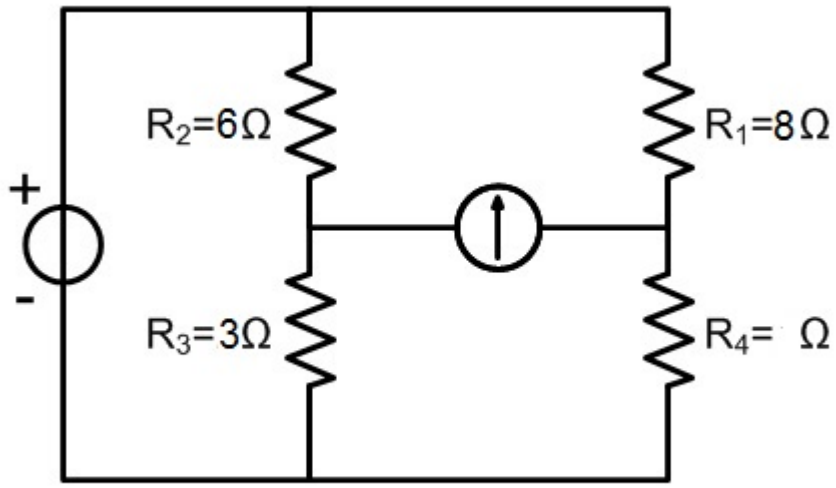
o (a) There is not enough information available to estimate whether the bridge is in balance or not.

• (b) No, the bridge is not in balance.

o (c) Yes, the bridge is in balance.

If choice b is selected set score to 1.

181. The bridge is in balance.



Calculate the value of R_4.

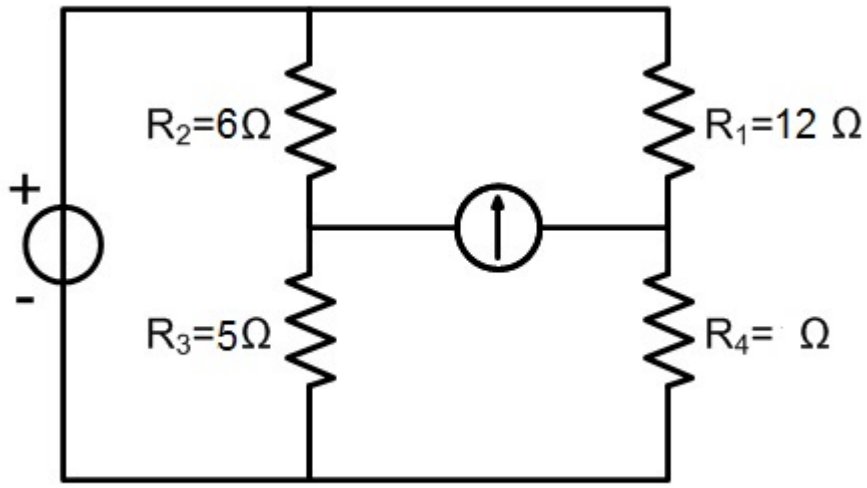
o (a) 7 Ω.

• (b) 4 Ω.

o (c) 9 Ω.

If choice b is selected set score to 1.

182. The bridge is in balance.



Calculate the value of R_4.

o (a) 3 Ω.

• (b) 10 Ω.

o (c) 9 Ω.

If choice b is selected set score to 1.

183. What means a negative temperature coefficient (α) for a material?

o (a) The change of resistance is only effective at temperatures below zero.
o (b) The resistance increases with an increase of temperature.

• (c) The resistance decreases with an increase of temperature.

If choice c is selected set score to 1.

184. The resistance of a Voltage Dependent Resistor (VDR)....

• (a) Increases when the applied voltage increases.

o (b) Varies only with a temperature change.
o (c) Increase when the applied voltage decreases.

If choice a is selected set score to 1.

185. The temperature coefficient of a resistor means....

• (a) the change in resistance per degree Centigrade.

- o (b) the heat dissipation of the resistor.
- o (c) the maximum temperature when the resistor is used for the heating purposes.

If choice a is selected set score to 1.

186. A multi-turn potentiometer is normally used for....

- o (a) high voltages.
- • (b) accurate adjustments.
- o (c) high frequencies.

If choice b is selected set score to 1.

187. An electrolytic rheostat is a rheostat with....

- o (a) carbon layer as resistor.
- o (b) metal wire as an resistor.
- • (c) conductive fluid as resistor.

If choice c is selected set score to 1.

188. A rheostat is a variable resistor which resistance value depends on....

- o (a) the supply voltage
- • (b) the position of the wiper
- o (c) the directions of current

If choice b is selected set score to 1.

189. Electric power is....

- o (a) proportional to electric energy and time.
- • (b) proportional to electric energy and inverse proportional to time.
- o (c) the same as electric energy.

If choice b is selected set score to 1.

190. High current conductors are not bundled together with other wires because....

- • (a) of danger to overheating.
- o (b) power and signal wires can be routed together.
- o (c) of too much weight.

If choice a is selected set score to 1.

191. What needs an electrical booster pump, when moving fuel to the engine fuel nozzles?

- (a) Electrical energy from a power source.

o (b) Mechanical energy from a power source.
o (c) Electrical power from a power source.

If choice a is selected set score to 1.

192. The power in an electric circuit depends on....

o (a) the applied voltage and the time the applied voltage is switched on.
o (b) the total current and the duration of that current.

- (c) the applied voltage and the total current.

If choice c is selected set score to 1.

193. Energy is....

o (a) when power is transformed into movement.
o (b) the same as power.

- (c) the power consumption during an amount of time.

If choice c is selected set score to 1.

194. What does it mean: "An electric component has a 50 percent efficiency" ?

o (a) The energy is 50 percent of the total power.
o (b) It needs 50 percent of the supply voltage.

- (c) The usefull power is one half of the supplied power.

If choice c is selected set score to 1.

195. A flap motor is supplied with 28 V DC. The current is 10 amp. Calculate the power consumption.

o (a) 2.8 W
o (b) 18 W

- (c) 280 W

If choice c is selected set score to 1.

196. A 14 Ohm resistor is connected parallel to a 56 Ohm resistor. Calculate the Resistance of the circuit?

- (a)
  11 Ω

o (b)
  0,09 Ω
o (c)
  784 Ω

If choice a is selected set score to 1.

197. A current of 2 Amp flows through a pitot tube heating element during 10 minutes. The supply voltage is 10 Volt. Calculate the consumed energy.

o (a) 200 J

- (b) 12 kJ

o (c) 20 J

If choice b is selected set score to 1.

198. In a 28 V DC circuit is placed an 11 Ω resistor. What is the total power consumption of this circuit?

- (a) 70 W

o (b) 42 W
o (c) 140 W

If choice a is selected set score to 1.

199. What is the Unit of capacitance?

o (a) Henry (H)

- (b) Farad (F)

o (c) Ohm (Ω)

If choice b is selected set score to 1.

200. What happens with the capacitance of a capacitor if the plate area increases?

The capacitance....

o (a) will not change.

- (b) will increase.

o (c) will decrease.

If choice b is selected set score to 1.

201. What happens with the capacitance of a capacitor if the plate area decreases?

The capacitance....

o (a) will not change.
o (b) will increase.

- (c) will decrease.

If choice c is selected set score to 1.

202. What happens with the capacitance of a capacitor if the distance between the plates decreases?

The capacitance....

o (a) will not change.

- (b) will increase.

o (c) will decrease.

If choice b is selected set score to 1.

203. What happens with the capacitance of a capacitor if the distance between the plates increases?

The capacitance....

o (a) will increase.
o (b) will not change.

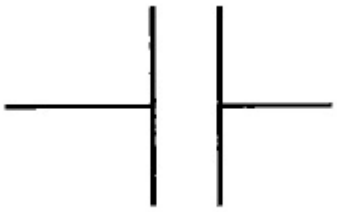
- (c) will decrease.

If choice c is selected set score to 1.

204. Which capacitor has the largest capacitance?

o (a)

o (b)



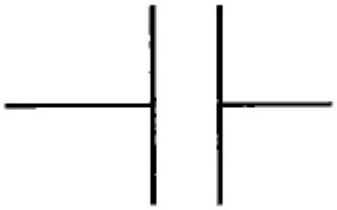
- (c)

If choice c is selected set score to 1.

205. Which capacitor has the lowest capacitance?

- (a)

o (b)



o (c)

If choice a is selected set score to 1.

206. What is the purpose of a capacitor?

o (a) To limit the current in a circuit

- (b) To store electrical energy.

o (c) To create a voltage in a circuit.

If choice b is selected set score to 1.

207. What will happen with a capacitor if the maximum voltage rating is exceeded?

The capacitor will be....

o (a) fully discharged.
o (b) fully charged.

- (c) destroyed

If choice c is selected set score to 1.

208. Which kinds of electrolytic capacitors are in use?

o (a) Dry electrolytic.

- (b) Wet electrolytic and dry electrolytic.

o (c) Wet electrolytic.

If choice b is selected set score to 1.

209. Which equation do we use to calculate the total capacitance of parallel capacitors?

o (a) $^1/_{Ct} = {}^1/_{C1} + {}^1/_{C2} + {}^1/_{C3}$
o (b) Ct = C1 - C2 - C3

- (c) Ct = C1 + C2 + C3

If choice c is selected set score to 1.

210. A capacitor of n47 can be labelled as....

o (a) 0.47 mF
o (b) 4.7 nF

- (c) 0.47 nF

If choice c is selected set score to 1.

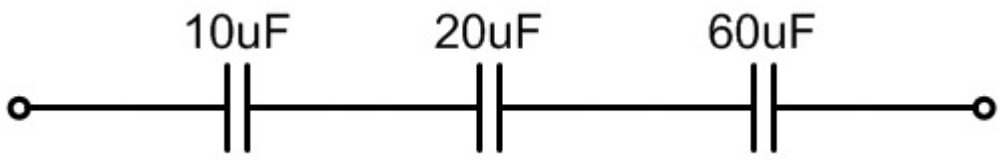
211. The colour code for capacitors....

- (a) identifies capacitor values.

o (b) shows the operating temperature in Fahrenheit.
o (c) shows the capacitance tolerance only.

If choice a is selected set score to 1.

212. Calculate the total capacitance of this circuit?



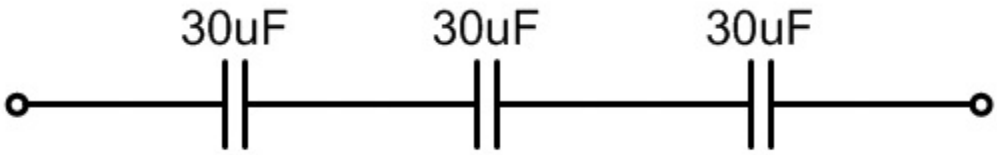
o (a) 45uF

- (b) 6uF

o (c) 90uF

If choice b is selected set score to 1.

213. Calculate the total capacitance of this circuit?

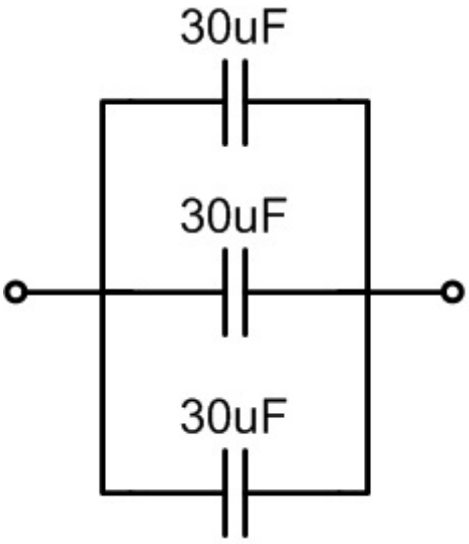


o (a) 30uF
o (b) 90uF

- (c) 10uF

If choice c is selected set score to 1.

214. Calculate the total capacitance of this circuit?

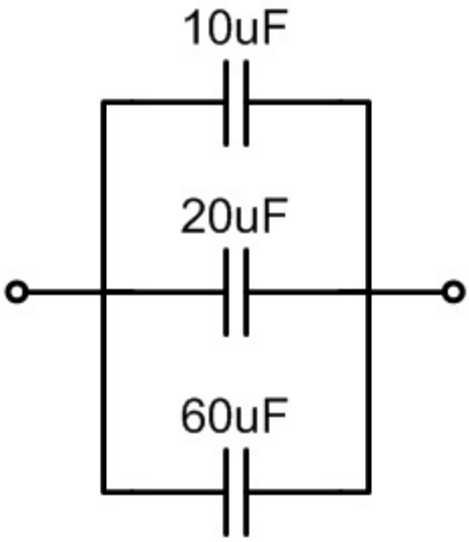


o (a) 30uF
o (b) 10uF

- (c) 90uF

If choice c is selected set score to 1.

215. Calculate the total capacitance of this circuit?



- (a) 90uF

o (b) 30uF
o (c) 6uF

If choice a is selected set score to 1.

216. The material in the gap of a capacitor is named....

- (a) the dielectric.

o (b) the core material.
o (c) the specific resistance.

If choice a is selected set score to 1.

217. Which type of a capacitor is use in a high voltage application, for instance a radio or radar transmitter?

- (a) Oil Capacitor.

o (b) Electrolyte capacitor.
o (c) SMD capacitor.

If choice a is selected set score to 1.

218. Testing capacitors is possible with....

o (a) ESR meter (equivalent series resistance) only.
o (b) Ohm meter and a capacitor load meter.

- (c) ESR meter (equivalent series resistance) and an Ohm meter.

If choice c is selected set score to 1.

219. The charging and discharging current by a Capacitor is....

o (a) not possible to calculate.

• (b) not in the same direction.

o (c) in the same direction.

If choice b is selected set score to 1.

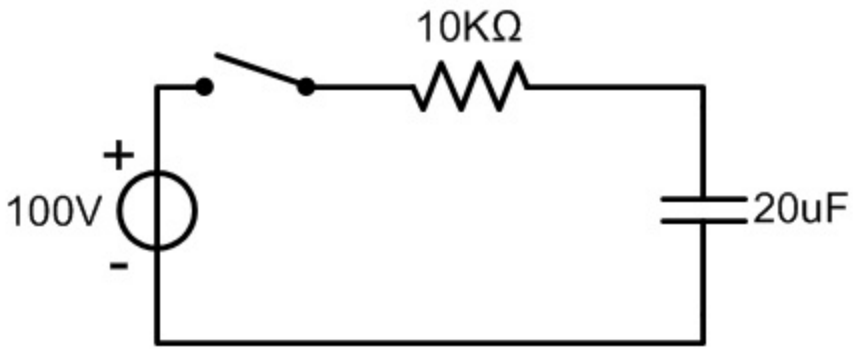
220. The charging and discharging DC current by a Capacitor is....

o (a) in the same direction.
o (b) not possible to calculate.

• (c) not in the same direction.

If choice c is selected set score to 1.

221. The capacitor in this circuit is not charged. Calculate the current immediately after closing the switch?



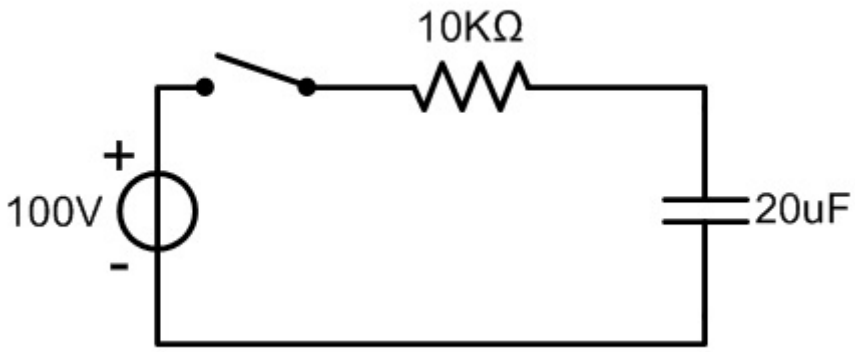
o (a) 0 mA

• (b) 10 mA

o (c) 0,1 mA

If choice b is selected set score to 1.

222. Calculate the time constant of this circuit?



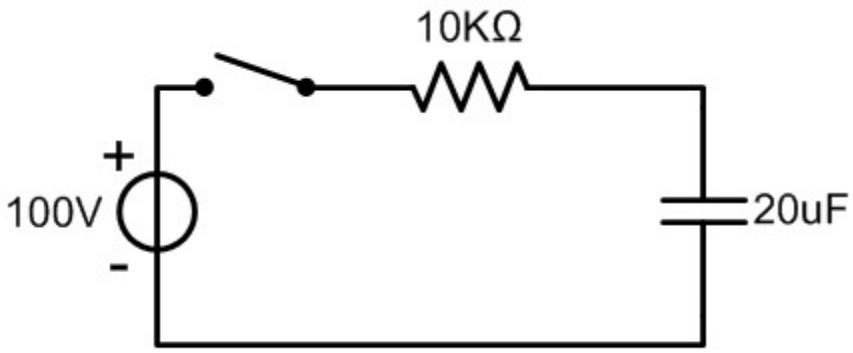
o (a) 2 ms

• (b) 200 ms

o (c) 100 ms

If choice b is selected set score to 1.

223. How long will it take to charge the capacitor in this circuit completely?



o (a) 2 ms

• (b) 200 ms

o (c) 1000 ms

If choice b is selected set score to 1.

224. If the direction of the current flow is known. The left hand rule provides a method, used to determine the direction of....

• (a) the lines of force (Magnetic Field).

o (b) the current flow.
o (c) the load.

If choice a is selected set score to 1.

225. To make permanent magnets....

o (a) magnetically soft material is used.

• (b) magnetically hard material is used.

o (c) any magnetically material is used.

If choice b is selected set score to 1.

226. If the bar magnet is cut or broken into pieces, each piece immediately becomes a....

• (a) north and south pole.

o (b) north pole.
o (c) south pole.

If choice a is selected set score to 1.

227. Consider two parallel wires conducting a current according to the picture. What will happen with those two wires?

The electromagnetic field of these wires will...

o (a) not influence each other.
o (b) strengthen each other.

• (c) repel each other.

If choice c is selected set score to 1.

228. What is a property of a magnetic force lines?

• (a) They exit the magnet through the north pole.

o (b) They travel from north pole to south pole inside the magnet.
o (c) They exit the magnet through the south pole.

If choice a is selected set score to 1.

229. What is a property of a magnetic force lines?

- o (a) They exit the magnet through the south pole.
- o (b) They cross each other.
- (c) They travel from south pole to north pole inside the magnet.

If choice c is selected set score to 1.

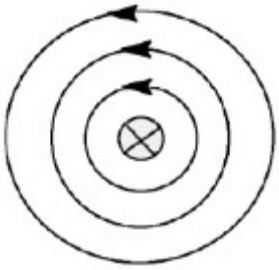
230. What is a property of magnetic force lines?

- (a) They cannot cross each other.
- o (b) They travel from north pole to south pole inside the magnet.
- o (c) They exit the magnet through the south pole.

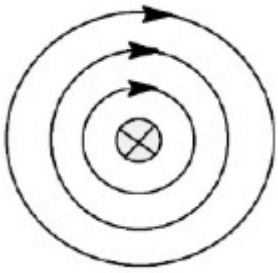
If choice a is selected set score to 1.

231. Which figure is valid for current in a conductor and the magnetic field around the conductor?

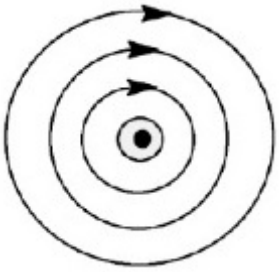
o (a)



- (b)

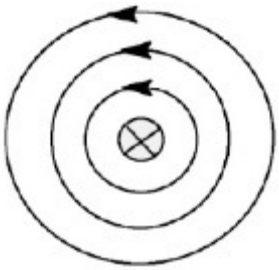


o (c)

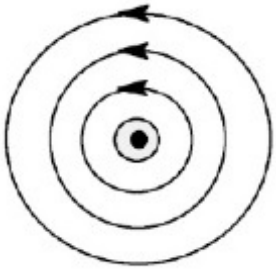


If choice b is selected set score to 1.

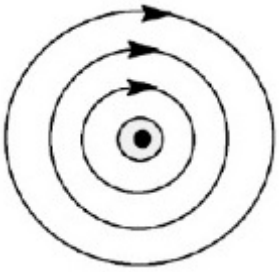
232. Which figure is valid for current in a conductor and the magnetic field around the conductor?



o (a)



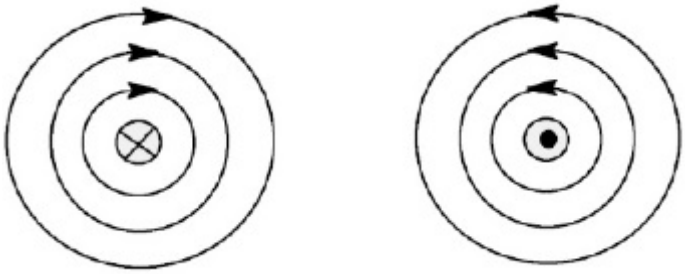
- (b)



o (c)

If choice b is selected set score to 1.

233. Consider two parallel wires conducting a current according the picture. What will happen with those two wires?



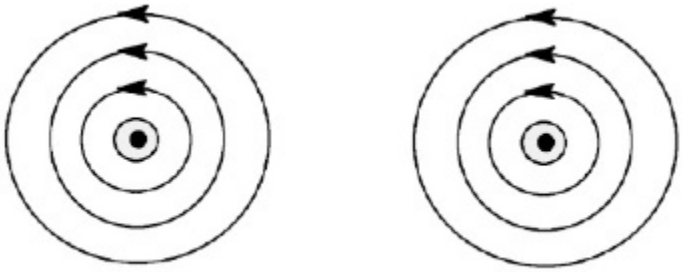
The wires will...

o (a) not influence each other.
o (b) attract each other.

- (c) repel each other

If choice c is selected set score to 1.

234. Consider two parallel wires conducting a current according the picture. What will happen with those two wires?



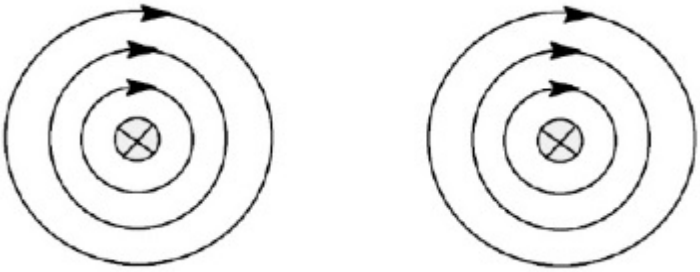
The wires will...

- (a) attract each other.

o (b) repel each other
o (c) not influence each other.

If choice a is selected set score to 1.

235. Consider two parallel wires conducting a current according the picture. What will happen with those two wires?



The wires will...

o (a) not influence each other.
o (b) repel each other

- (c) strengthen each other.

If choice c is selected set score to 1.

236. Consider two parallel wires conducting a current according the picture. What will happen with those two wires, according to the total magnetic field?

The magnetic field of the wires will...

o (a) repel each other
o (b) not influence each other.

• (c) strengthen each other.

If choice c is selected set score to 1.

237. Consider two parallel wires conducting a current according the picture. What will happen with those two wires?

The wires will...

o (a) not influence each other.
o (b) repel each other

• (c) attract each other.

If choice c is selected set score to 1.

238. An aircraft magnetic compass has....

o (a) one compensation screw marked N-S compensation.

• (b) two compensation screws, marked N-S and E-W compensation.

o (c) two compensation screws marked N-E and S-W compensation.

If choice b is selected set score to 1.

239. The earth magnetic poles are....

o (a) the geographical poles and the earth magnetic poles are the same.

• (b) not located at the geographical poles.

o (c) located at the geographic poles.

If choice b is selected set score to 1.

240. The most common categories of magnet materials are made of....

- (a) Aluminium - Nickel - Cobalt.

o (b) Aluminium - Nickel - Copper.
o (c) Aluminium - Nickel - Silver.

If choice a is selected set score to 1.

241. Why do we install shielded electrical wires?

o (a) As a return conductor.

- (b) To protect for Electro Magnetic Interference.

o (c) For more mechanical strength.

If choice b is selected set score to 1.

242. The strength of the magnetic field of an electromagnet can be increased by....

o (a) decreasing the current flow and increasing the number of windings.
o (b) increasing the current flow and decreasing the number of windings.

- (c) increasing the current flow, or increasing the number of windings.

If choice c is selected set score to 1.

243. Permanent magnets are used in....

o (a) devices with big power.
o (b) devices with big and low power.

- (c) devices with low power.

If choice c is selected set score to 1.

244. What is the purpose of the soft iron core for the current carrying coil of an electro magnet?

o (a) To support the turns of the coil.

- (b) To increase the magnetic flux.

o (c) To avoid saturation.

If choice b is selected set score to 1.

245. What is the purpose of the soft iron core for the current carrying coil of an electro magnet?

- o (a) To avoid saturation.
- o (b) To support the turns of the coil.
- • (c) To concentrate the flux lines.

If choice c is selected set score to 1.

246. What is the unit of "magnetic field strength"?

- • (a) A/m
- o (b) V/A
- o (c) V/Nm

If choice a is selected set score to 1.

247. Ferromagnetic materials are....

- o (a) never magnetized.
- o (b) permanent strong magnetized.
- • (c) magnetized easily.

If choice c is selected set score to 1.

248. What happens with the magneto motive force if the current in a coil increases?

The magneto motive force...

- o (a) will not change.
- • (b) will increase.
- o (c) will decrease.

If choice b is selected set score to 1.

249. What happens with the magneto motive force if the current in a coil decreases?

The magneto motive force...

- o (a) will not change.
- • (b) will decrease.
- o (c) will increase.

If choice b is selected set score to 1.

250. What happens with the magneto motive force if the number of turns of a coil decreases?

The magneto motive force...

o (a) will increase.

• (b) will decrease.

o (c) will not change.

If choice b is selected set score to 1.

251. What happens with the magneto motive force if the number of turns of a coil increases?

The magneto motive force...

• (a) will increase.

o (b) will not change.
o (c) will decrease.

If choice a is selected set score to 1.

252. What happens with the flux density if the flux increases?

The flux density...

• (a) will increase.

o (b) will not change.
o (c) will decrease.

If choice a is selected set score to 1.

253. What happens with the flux density if the flux decreases?

The flux density...

o (a) will increase.
o (b) will not change.

• (c) will decrease.

If choice c is selected set score to 1.

254. What happens with the flux density if the surface area of a magnet decreases?

The flux density...

• (a) will increase.

o (b) will not change.

o (c) will decrease.

If choice a is selected set score to 1.

255. What happens with the flux density if the surface area of a magnet increases?

The flux density...

o (a) will increase.
o (b) will not change.

• (c) will decrease.

If choice c is selected set score to 1.

256. How can the strength of the magnetic field of an electro magnet be increased?

o (a) Increase the surface area of the coil.

• (b) Increase the flow of current.

o (c) Decrease the number of turns.

If choice b is selected set score to 1.

257. How can the strength of the magnetic field of an electro magnet be increased?

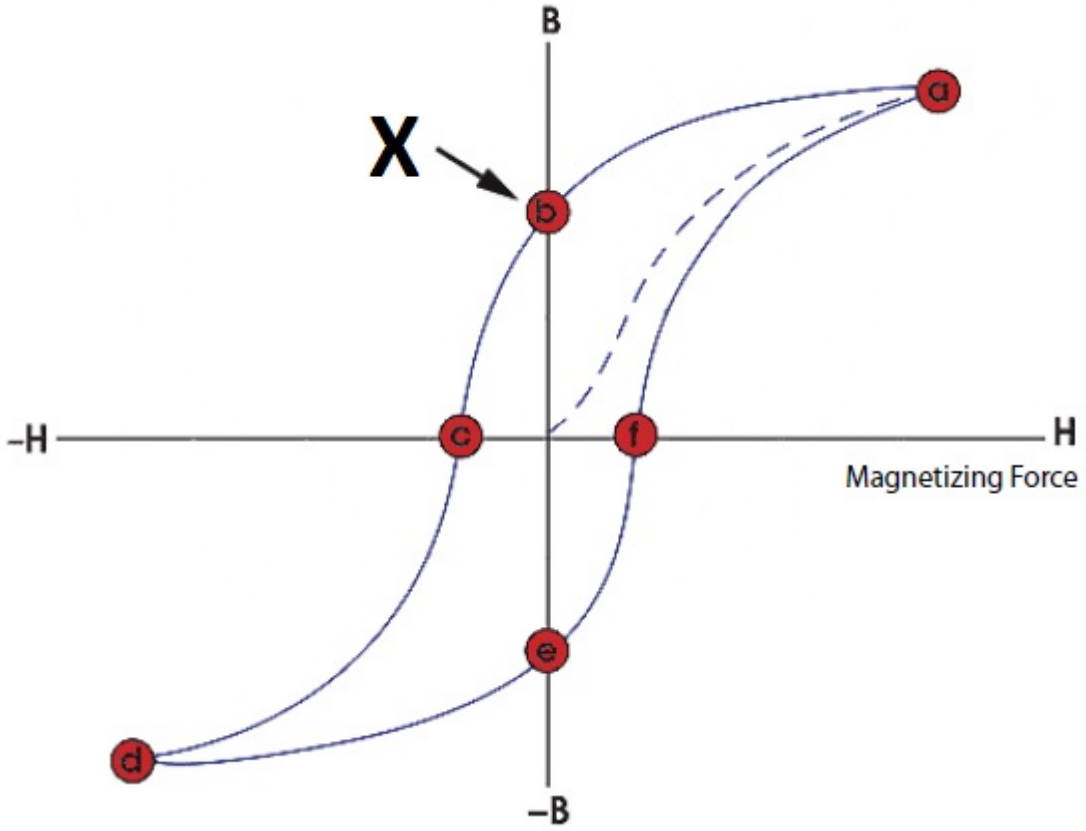
o (a) Decrease the flow of current.

• (b) Increase the number of turns.

o (c) Increase the surface area of the coil.

If choice b is selected set score to 1.

258. What is the name of the point with an X in this graph?

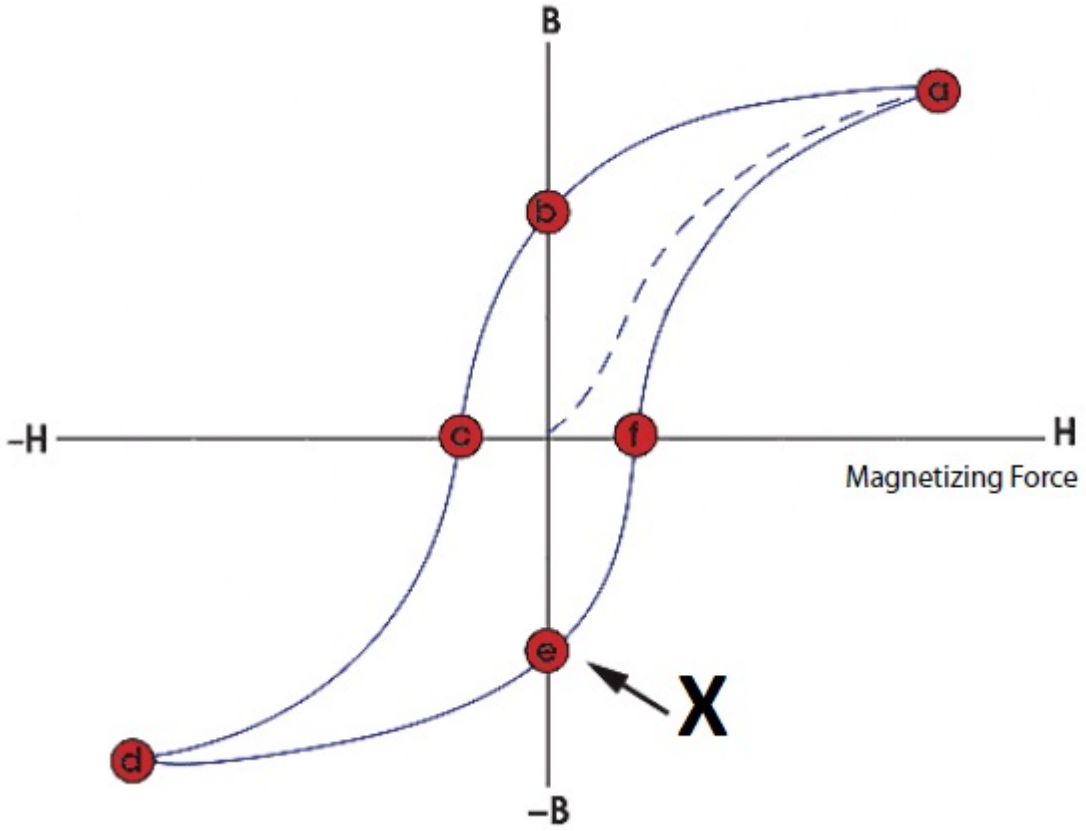


- o (a) Coercivity point.
- o (b) Saturation point.

- (c) Retentivity point.

If choice c is selected set score to 1.

259. What is the name of the point marked with an X in this graph?

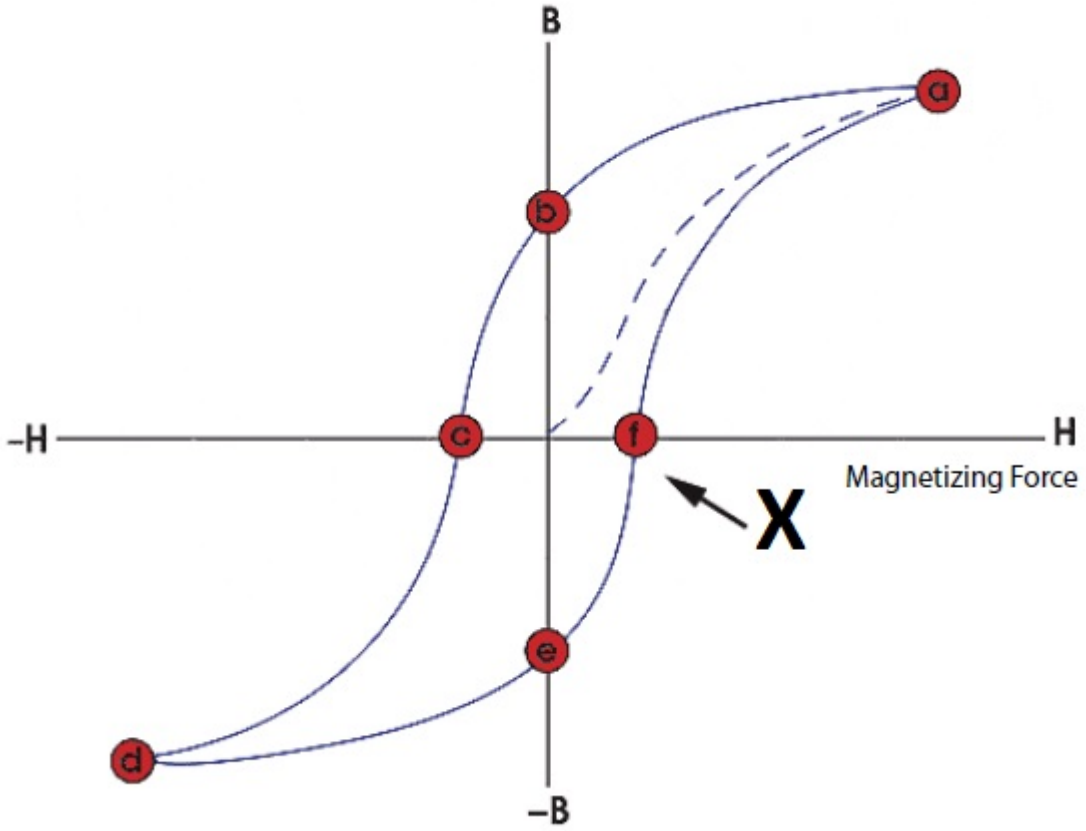


- (a) Retentivity point.

o (b) Coercivity point.
o (c) Saturation point.

If choice a is selected set score to 1.

260. What is the name of the point marked with an X in this graph?

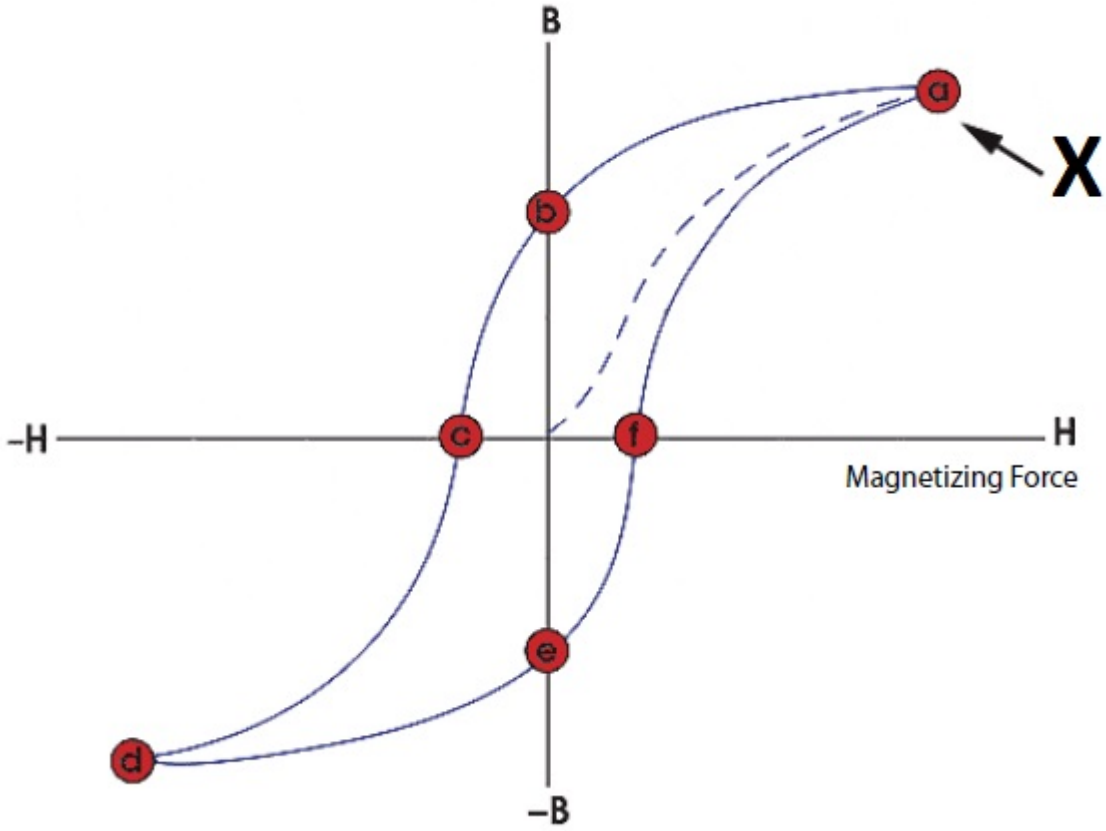


- (a) Coercivity point.

o (b) Retentivity point.
o (c) Saturation point

If choice a is selected set score to 1.

261. What is the name of the point marked with an X in this graph?

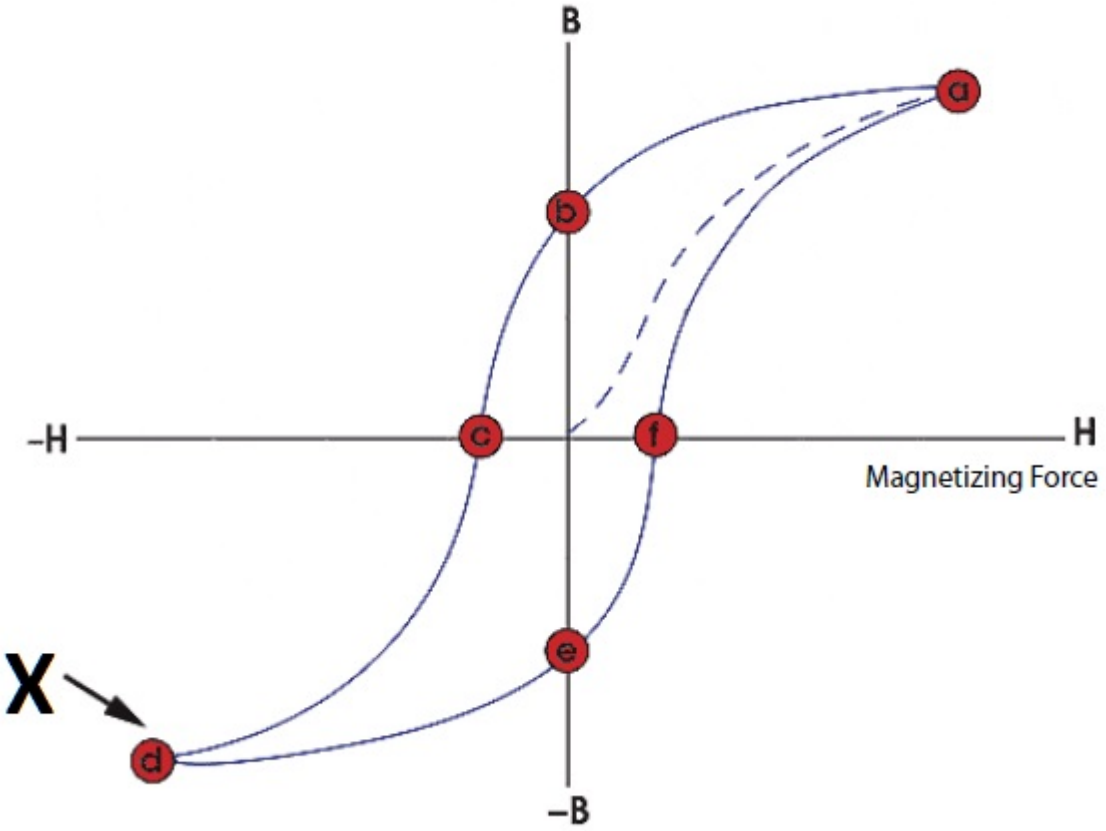


- (a) Saturation point.

o (b) Retentivity point.
o (c) Coercivity point.

If choice a is selected set score to 1.

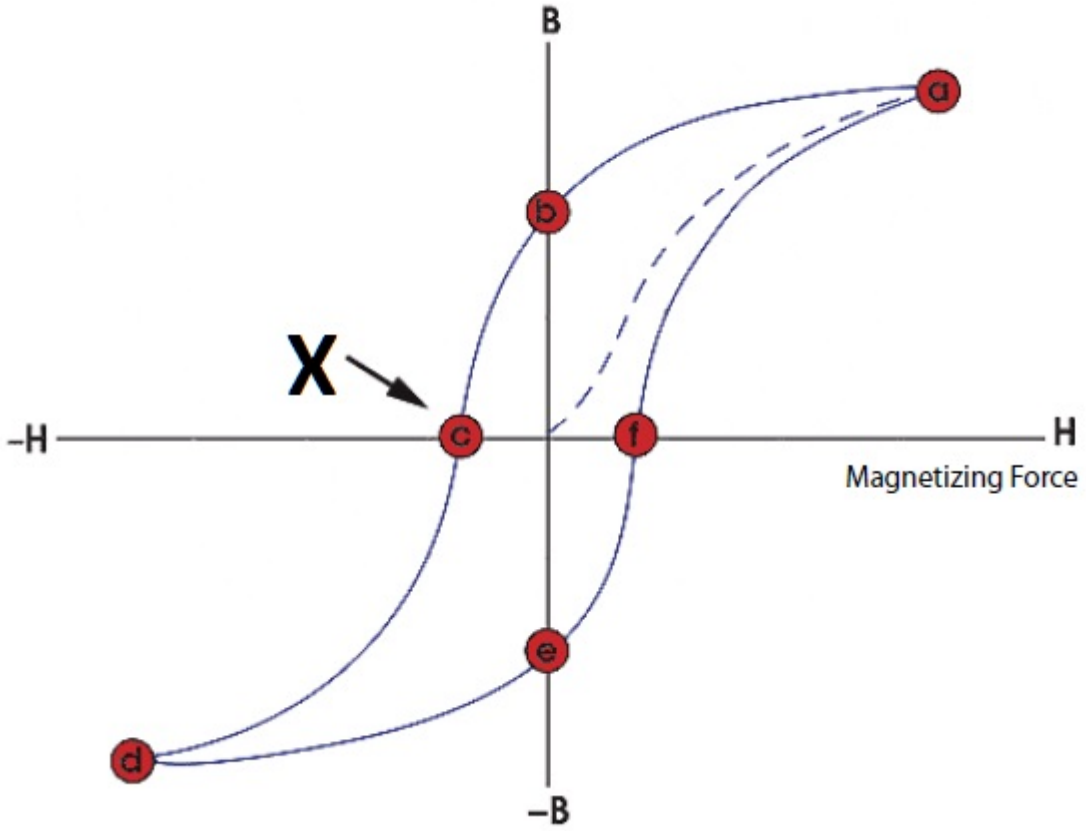
262. What is the name of the point marked with an X in this graph?



- o (a) Retentivity point.
- • (b) Saturation point.
- o (c) Coercivity point.

If choice b is selected set score to 1.

263. What is the name of the point marked with an X in this graph?

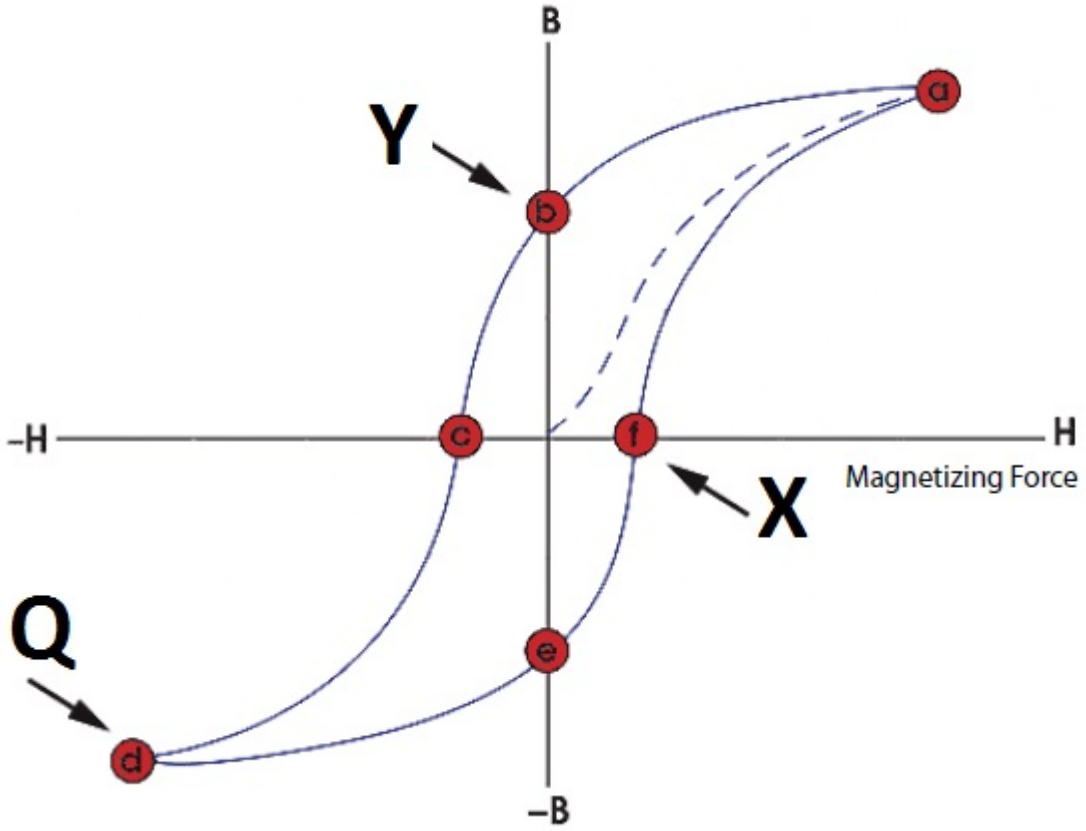


- o (a) Retentivity point.
- o (b) Saturation point.

- (c) Coercivity point.

If choice c is selected set score to 1.

264. Which point in the hysteresis loop marks the saturation point?

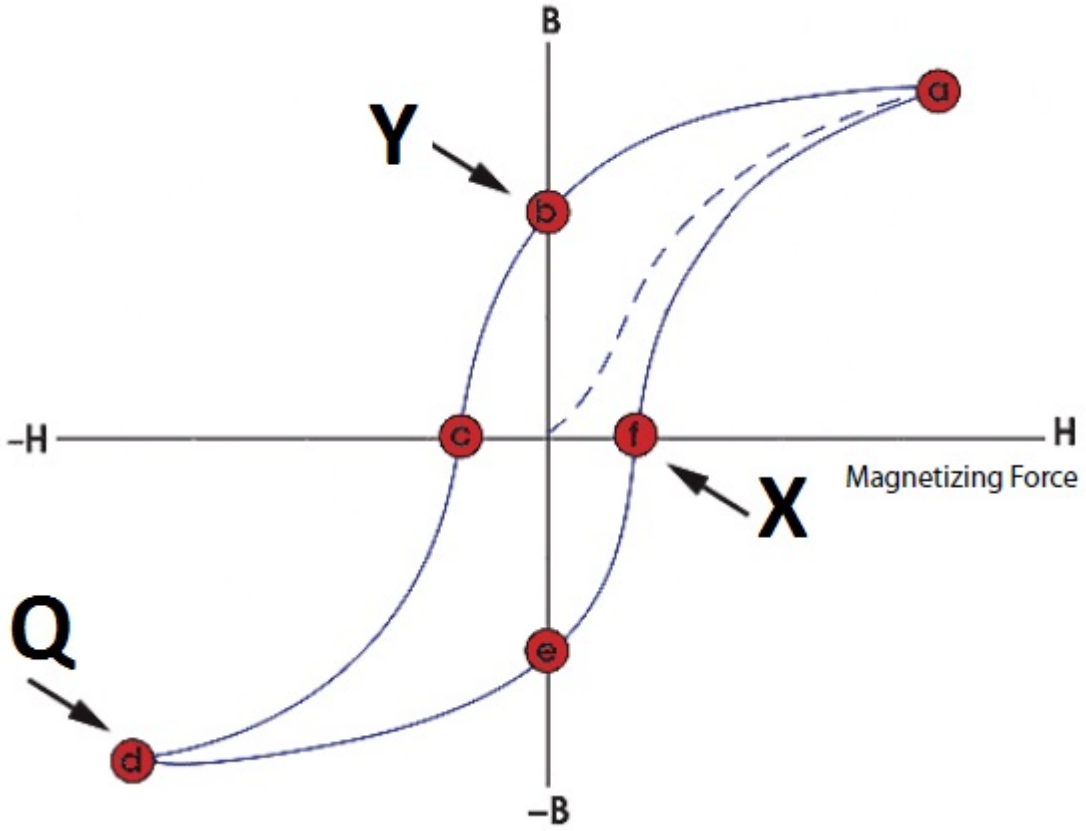


- (a) Point Q.

o (b) Point Y.
o (c) Point X.

If choice a is selected set score to 1.

265. Which point in the hysteresis loop marks the retentivity point?



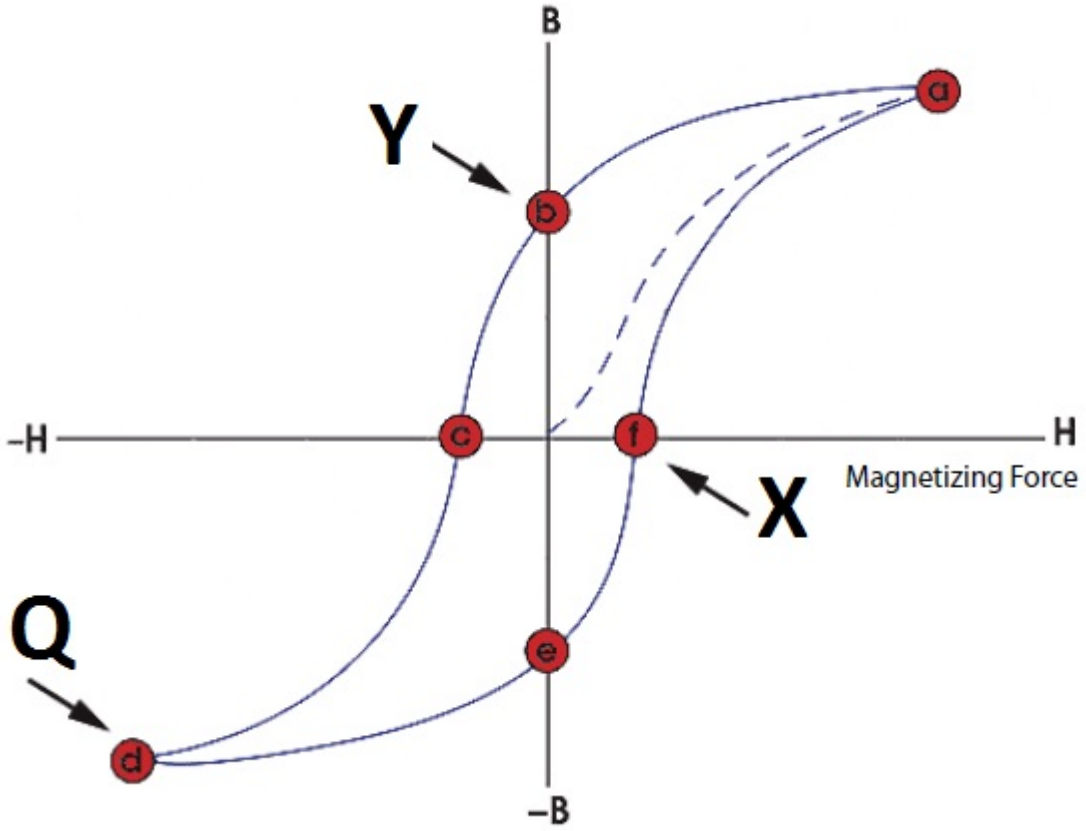
o (a) Point X.

• (b) Point Y.

o (c) Point Q.

If choice b is selected set score to 1.

266. Which point in the hysteresis loop marks the coercivity point?



- (a) Point X.

o (b) Point Q.
o (c) Point Y.

If choice a is selected set score to 1.

267. What is residual magnetism?

o (a) The force required to remove the residual magnetism from the material.

- (b) The magnetic flux density that remains in a material when the magnetizing force is zero.

o (c) All the magnetic domains are aligned and an additional increase of magnetizing force will produce very little increase in magnetic flux.

If choice b is selected set score to 1.

268. What is coercivity?

o (a) The magnetic flux density that remains in a material when the magnetizing force is zero.
o (b) All the magnetic domains are aligned and an additional increase of magnetizing force will produce very little increase in magnetic flux.

- (c) The force required to remove the residual magnetism from the material.

If choice c is selected set score to 1.

269. What is saturation for a magnetic material?

- o (a) The magnetic flux density that remains in a material when the magnetizing force is zero.
- (b) All the magnetic domains are aligned and an additional increase of magnetizing force will produce very little increase in magnetic flux.
- o (c) The force required to remove the residual magnetism from the material.

If choice b is selected set score to 1.

270. Which material has the lowest reluctance?

- o (a) Air.
- o (b) Permanent magnet.
- (c) Soft iron.

If choice c is selected set score to 1.

271. Which material has the highest reluctance?

- o (a) Air.
- o (b) Soft iron.
- (c) Permanent magnet.

If choice c is selected set score to 1.

272. Shock, Stress and Vibration has...

- o (a) no influence on magnet materials.
- o (b) almost none influence on magnet materials.
- (c) influence on permanent magnets.

If choice c is selected set score to 1.

273. What are precautions for care and storage of magnets?

- o (a) Magnets should be kept away from non-sensitive electronic equipment
- (b) Magnets should be kept away from sensitive electronic equipment.
- o (c) Not existing.

If choice b is selected set score to 1.

274. What is the purpose of the keeper?

o (a) Demagnetize the magnet after milling.

• (b) Protecting the magnet from adverse fields.

o (c) Keep a magnet between the turns of a loop.

If choice b is selected set score to 1.

275. When a coil is moved towards a magnetic field, the resulting induced EMF will....

o (a) remain the same as the coil gets closer to the magnetic field.
o (b) decrease as the coil gets closer to the magnetic field.

• (c) increase as the coil gets closer to the magnetic field.

If choice c is selected set score to 1.

276. How is an EMF induced in a coil?

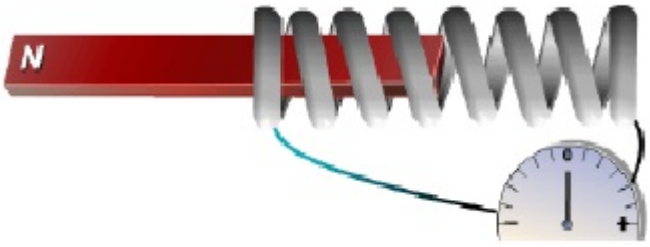
o (a) Place the coil and magnet close to each other.

• (b) By relative motion between coil and magnet.

o (c) Moving two magnets to each other.

If choice b is selected set score to 1.

277. A coil is connected to a galvanometer (see picture). What will happen with the needle of the galvanometer if the magnet moves towards the coil?

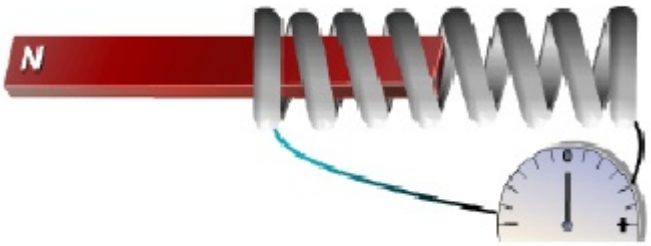


• (a) The needle will deflect.

o (b) There is not enough information to make a prediction of the movement of the needle.
o (c) The needle will not deflect.

If choice a is selected set score to 1.

278. A coil is connected to a galvanometer (see picture). What will happen with the needle of the galvanometer if the magnet moves away from the coil?



- (a) The needle will deflect.

o (b) There is not enough information to make a prediction of the movement of the needle.
o (c) The needle will not deflect.

If choice a is selected set score to 1.

279. A coil is connected to a galvanometer (see picture). What will happen with the needle of the galvanometer if the magnet does not move relative to the coil.?

o (a) There is not enough information to make a prediction of the movement of the needle.
o (b) The needle will deflect.

- (c) The needle will not deflect.

If choice c is selected set score to 1.

280. What is required to obtain mutual inductance between 2 coils?

o (a) Both coils must be powered.
o (b) Coils must be of similar size.

- (c) One coil must be powered.

If choice c is selected set score to 1.

281. If two coils have a coupling factor of "1", this is named?

o (a) Tightly coupled.

- (b) Perfectly coupled

o (c) Loosely coupled.

If choice b is selected set score to 1.

282. What can be done to greatly increase the mutual inductance between two coils?

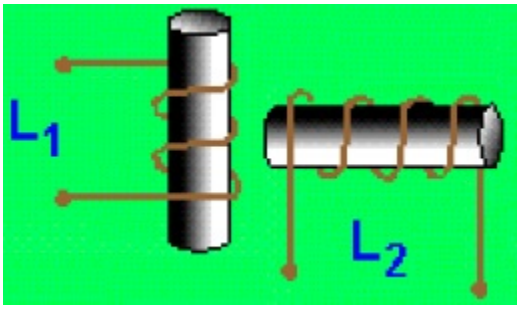
o (a) Increase the input voltage.

- (b) Place them on a common iron core.

o (c) Use wire with a lower resistance.

If choice b is selected set score to 1.

283. How large is the coupling factor, k, between those two coils?

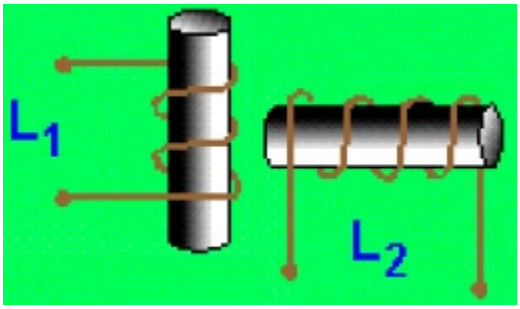


- (a) k = 0

o (b) k = 1
o (c) k > 0,5

If choice a is selected set score to 1.

284. How large is the mutual inductance between these two coils?



The mutual inductance is....

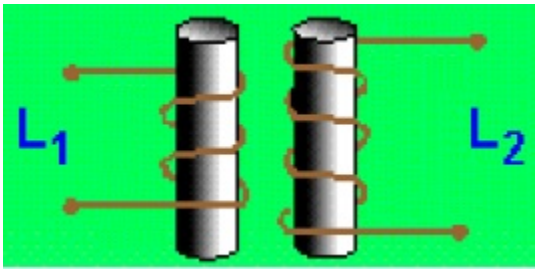
o (a) small.

- (b) zero.

o (c) large.

If choice b is selected set score to 1.

285. How large is the mutual induction between these two coils?



The mutual induction is...

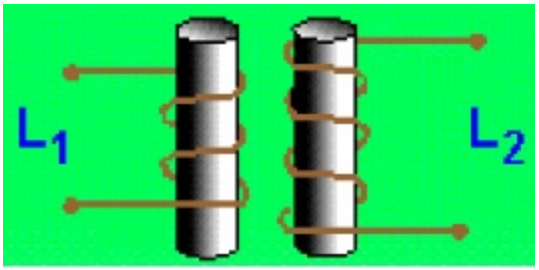
o (a) zero.

- (b) large.

o (c) small.

If choice b is selected set score to 1.

286. How large is the mutual induction between these two coils?

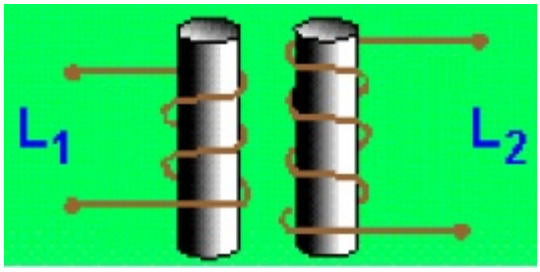


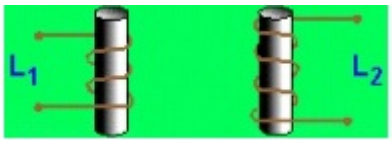
o (a) k = 0,5
o (b) k = 0

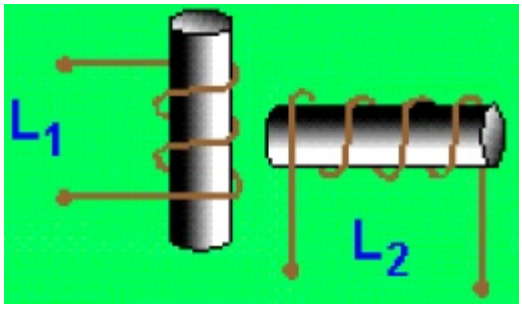
- (c) k = 1

If choice c is selected set score to 1.

287. In which picture is the coupling factor "k" between the two coils the largest?

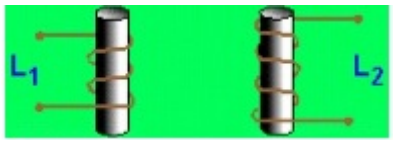
- (a) 

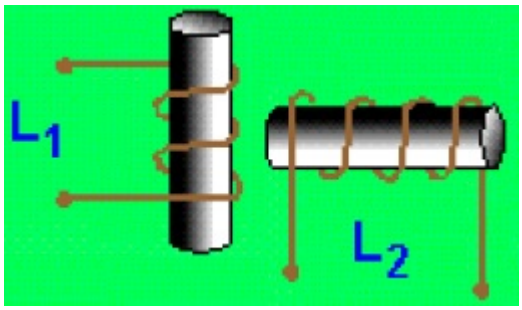
o (b) 

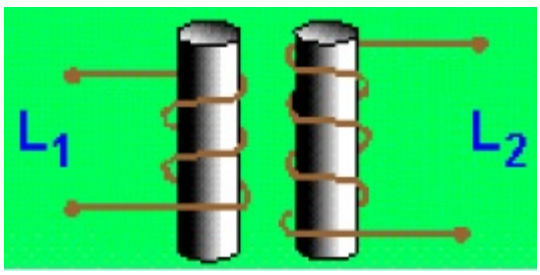
o (c) 

If choice a is selected set score to 1.

288. In which picture is the coupling factor "k" between the two coils the lowest?

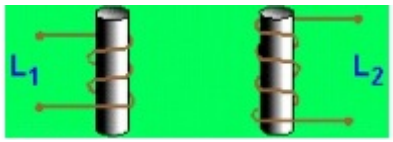
o (a) 

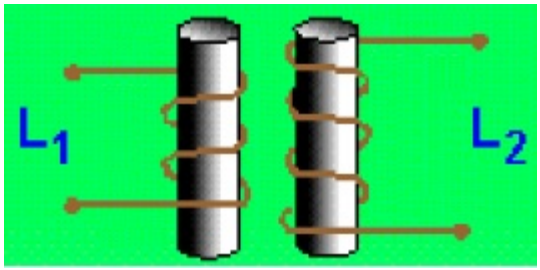
- (b) 

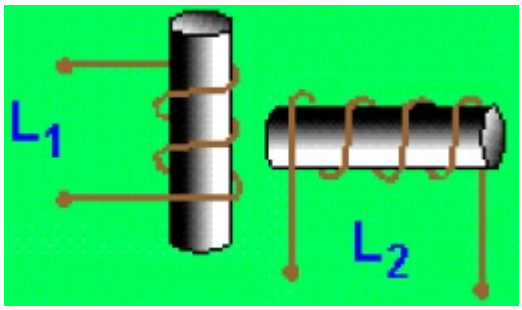
o (c) 

If choice b is selected set score to 1.

289. In which picture is the mutual inductance between the two coils the largest?

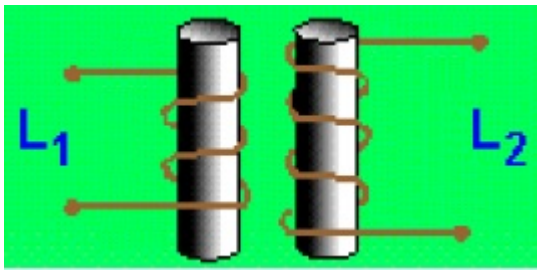
o (a) 

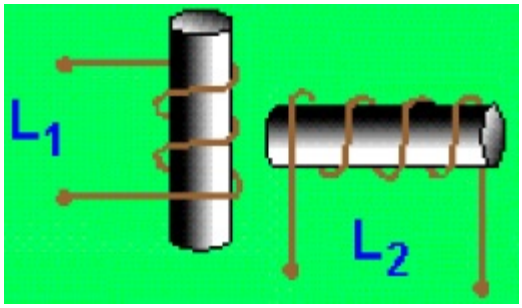
• (b) 

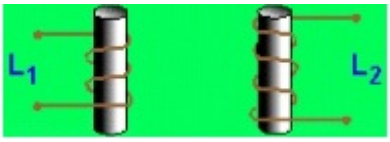
o (c) 

If choice b is selected set score to 1.

290. In which picture is the mutual inductance between the two coils the lowest?

o (a) 

• (b) 

o (c) 

If choice b is selected set score to 1.

291. Two coils are coupled in series with each other. What is the influence of this coupling on the induced voltage?

- (a) The induced voltage will be large.

o (b) There will be no voltage induced.
o (c) The induced voltage will be small.

If choice a is selected set score to 1.

292. The mutual inductance between two coils is zero. What is the influence of this mutual inductance on the induced voltage?

o (a) The induced voltage will be small.
o (b) The induced voltage will be large.

- (c) There will be no voltage induced.

If choice c is selected set score to 1.

293. How can the self-induced voltage in a coil be increased? By....

o (a) removing the iron core out of the coil.
o (b) using a DC voltage instead of an AC voltage.

- (c) increasing the number of turns of the coil.

If choice c is selected set score to 1.

294. How can the self-induced voltage in a coil be increased? By....

o (a) decreasing the number of turns of the coil.
o (b) using a DC voltage instead of an AC voltage.

- (c) putting the coil on an iron core.

If choice c is selected set score to 1.

295. How can the self-induced voltage in a coil be increased? By....

o (a) removing the iron core out of the coil.
o (b) decreasing the number of turns of the coil.

- (c) increasing the rate of current change.

If choice c is selected set score to 1.

296. According to Lenz Law, what happens to the magnetic field in a coil when the north pole of a magnet approaches the coil?

o (a) Both fields will remain the same.
o (b) The magnetic field of the magnet and the coil will join and create a bigger field.

• (c) The coil will induce a magnetic field which will oppose the field of the magnet.

If choice c is selected set score to 1.

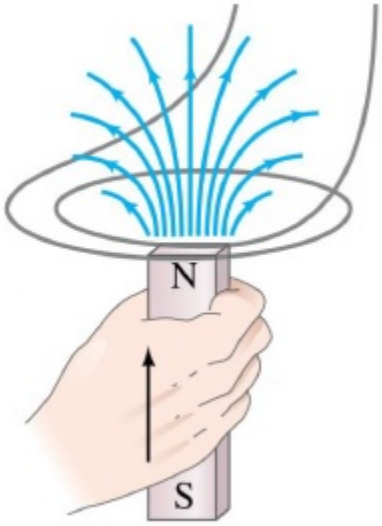
297. Back EMF is another name for....

• (a) self-induced voltage.

o (b) mutual induction.
o (c) self-induced current.

If choice a is selected set score to 1.

298. What will happen at the approaching coil side?



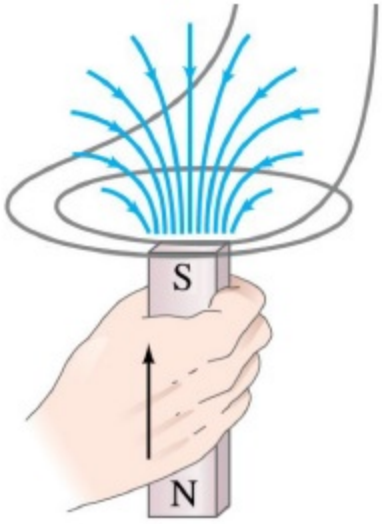
o (a) A magnetic north pole arises.

• (b) A magnetic south pole arises.

o (c) Nothing will happen.

If choice b is selected set score to 1.

299. What will happen at the approaching coil side?

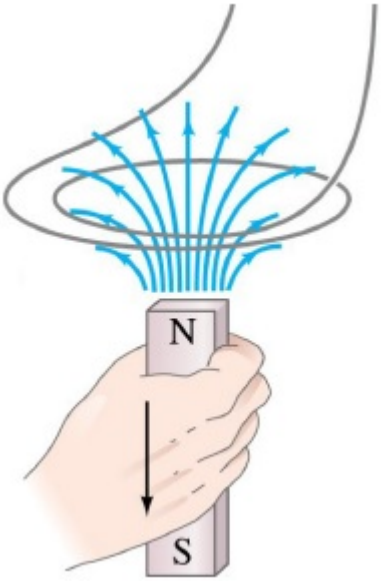


o (a) Nothing will happen.
o (b) A magnetic north pole arises.

• (c) A magnetic south pole arises.

If choice c is selected set score to 1.

300. What will happen at the approaching coil side?



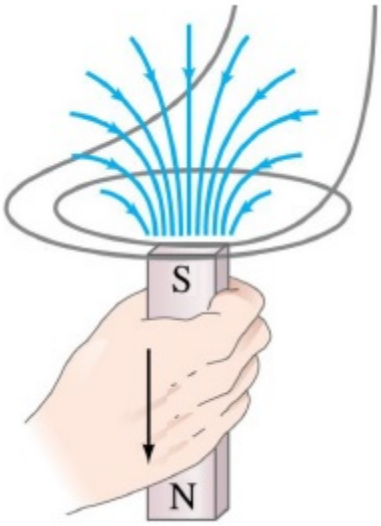
• (a) A magnetic south pole arises.

o (b) Nothing will happen.

o (c) A magnetic north pole arises.

If choice a is selected set score to 1.

301. What will happen at the approaching coil side?

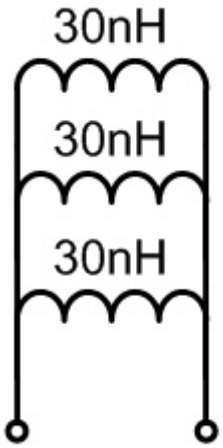


- (a) A magnetic north pole arises.

o (b) A magnetic south pole arises.
o (c) Nothing will happen.

If choice a is selected set score to 1.

302. Calculate the total inductance of this circuit.(There is no mutual inductance)

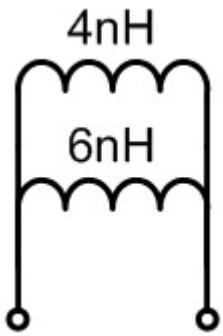


- (a) 10 nH.

o (b) 30 nH.
o (c) 90 nH.

If choice a is selected set score to 1.

303. Calculate the total inductance of this circuit. (There is no mutual inductance)



o (a) 24 nH.
o (b) 10 nH.

- (c) 2,4 nH.

If choice c is selected set score to 1.

304. Calculate the total inductance of this circuit. (There is no mutual inductance)

o (a) 1,6 nH.

- (b) 9 nH.

o (c) 0,6 nH.

If choice b is selected set score to 1.

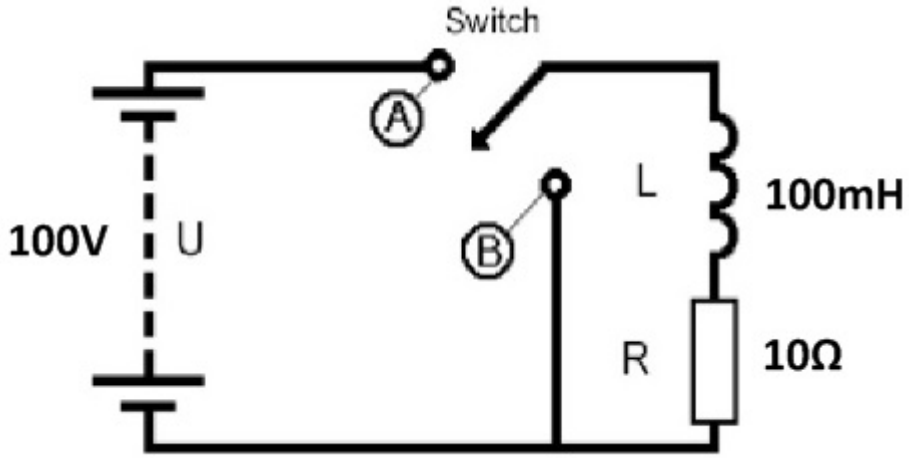
305. Calculate the total inductance of this circuit. (There is no mutual inductance)

- (a) 180 nH.

- (b) 0,05 nH.
- (c) 20 nH.

If choice a is selected set score to 1.

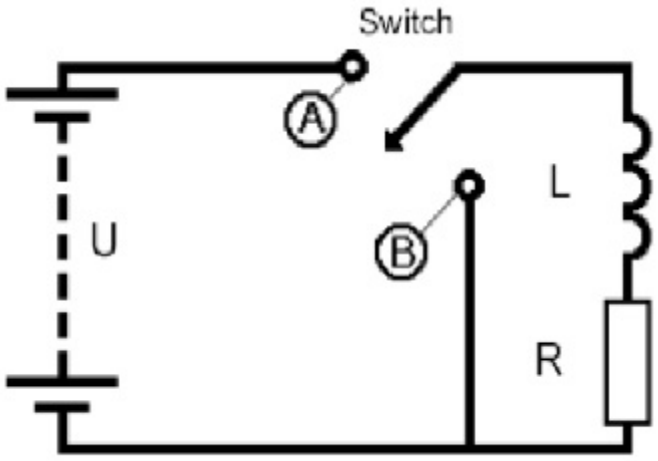
306. Calculate the time constant of this circuit.



- (a) 0,1 ms.
- (b) 10 ms.
- (c) 1000 ms.

If choice b is selected set score to 1.

307. Which formula is used to calculate the time constant of this circuit?



- (a) $\tau = \frac{L}{R}$

$\tau = R \cdot L$

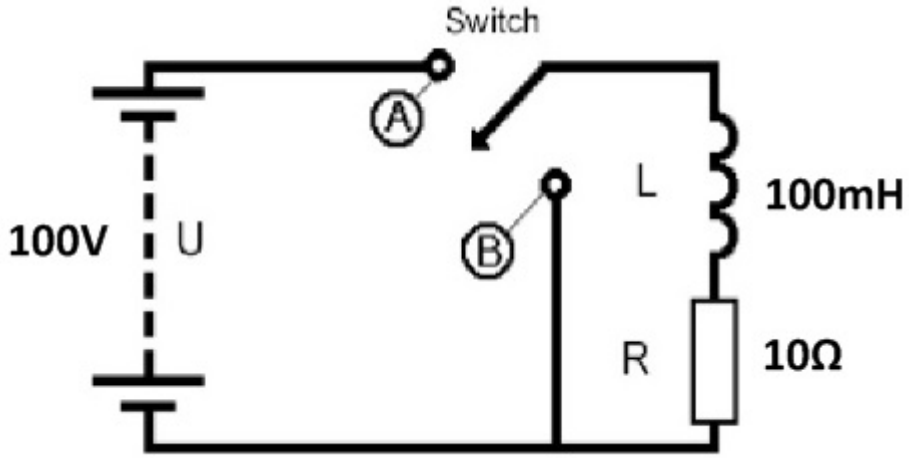
o (b)

$\tau = \frac{R}{L}$

o (c)

If choice a is selected set score to 1.

308. Estimate the current in this circuit immediately after moving the switch into position A. The frequency of the power source is 400 Hz.

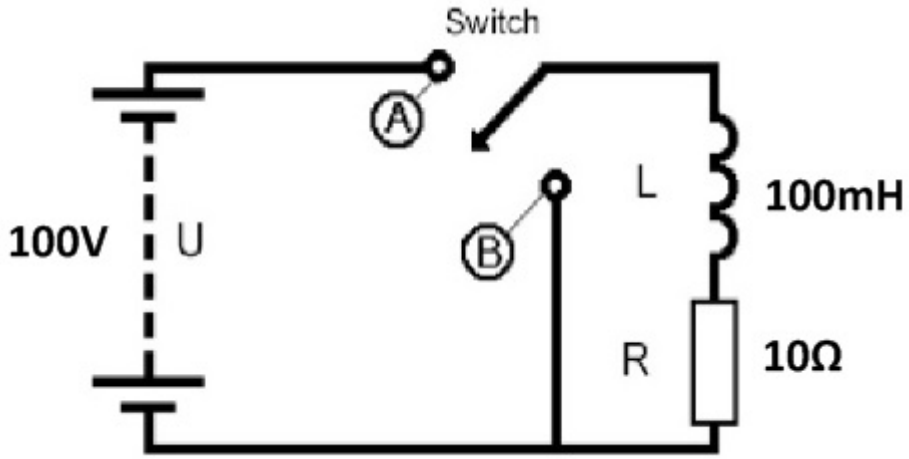


- (a) 6,3 A.

o (b) 0 A.
o (c) 10 A.

If choice a is selected set score to 1.

309. Estimate the current in this circuit 100 ms after moving the switch into position A.

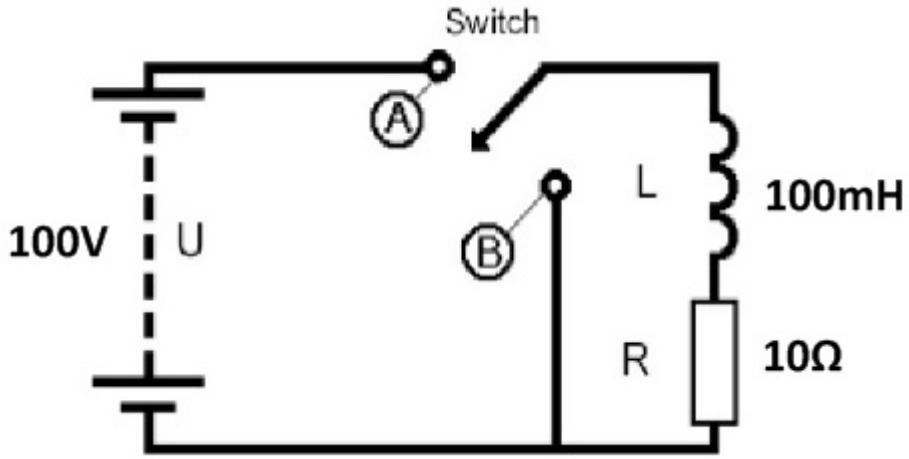


o (a) 0A.
o (b) 6,3 A.

- (c) 10 A.

If choice c is selected set score to 1.

310. Estimate the current in this circuit 10 ms after moving the switch into position A.

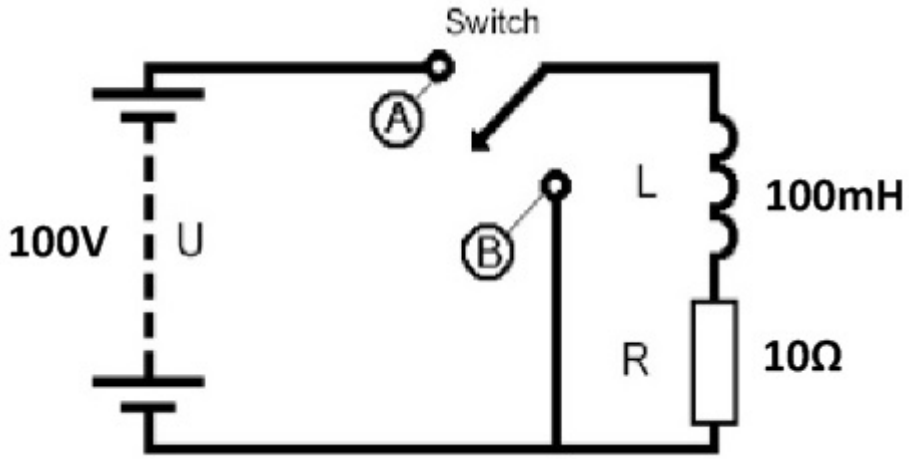


- (a) 6,3 A.

o (b) 0 A.
o (c) 10 A.

If choice a is selected set score to 1.

311. Estimate the voltage across the coil 10 ms after moving the switch into position A.

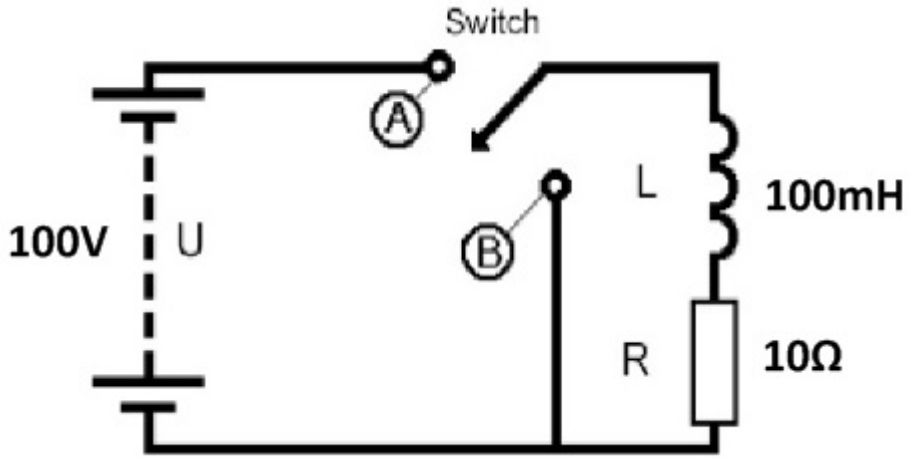


- (a) 37 V.

o (b) 0 V.
o (c) 100 V.

If choice a is selected set score to 1.

312. Estimate the voltage across the coil 100 ms after moving the switch into position A.

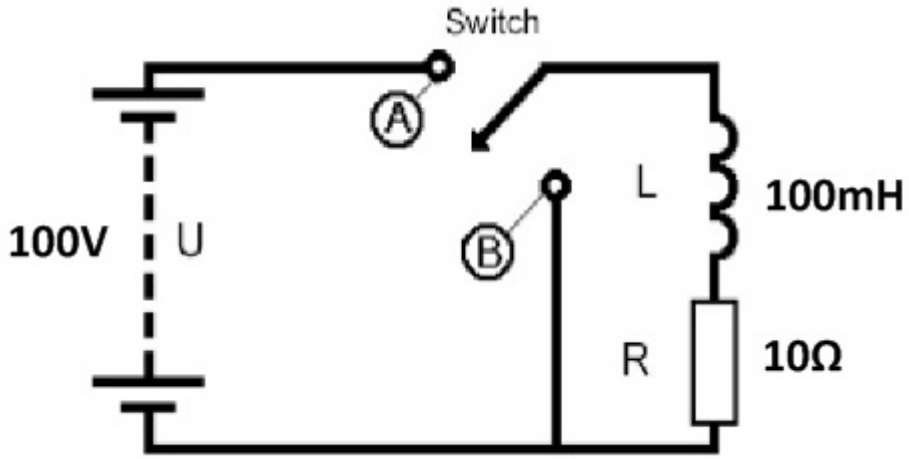


- (a) 0 V.

o (b) 37 V.
o (c) 100 V.

If choice a is selected set score to 1.

313. Estimate the voltage across the resistor 100 ms after moving the switch into position A.

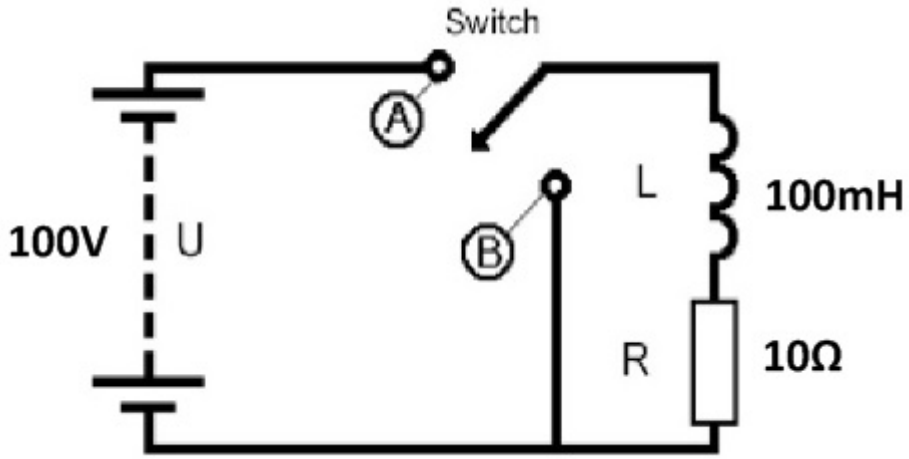


- (a) 100 V.

o (b) 0 V.
o (c) 37 V.

If choice a is selected set score to 1.

314. How long does it take to get the maximum current flowing in this circuit, immediately after moving the switch into position A?

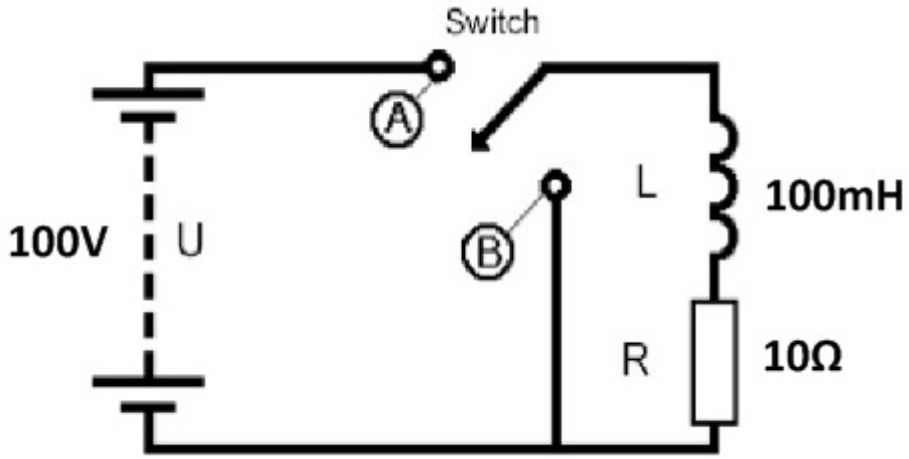


- (a) 50 ms.

o (b) 0 s.
o (c) 10 ms.

If choice a is selected set score to 1.

315. Estimate the voltage across the coil immediately after moving the switch into position A.



- (a) 100 V.

o (b) 37 V.
o (c) 0 V.

If choice a is selected set score to 1.

316. In which part of the generator would you find wave or lap windings?

- (a) The armature

o (b) The yoke
o (c) The commutator

If choice a is selected set score to 1.

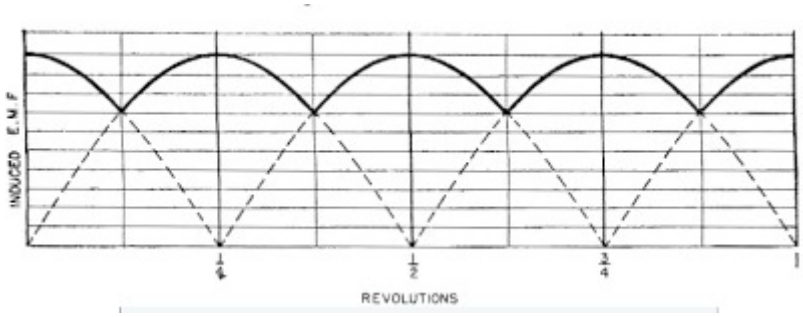
317. The electromagnets which supply the magnetic field for a DC generator are located in....

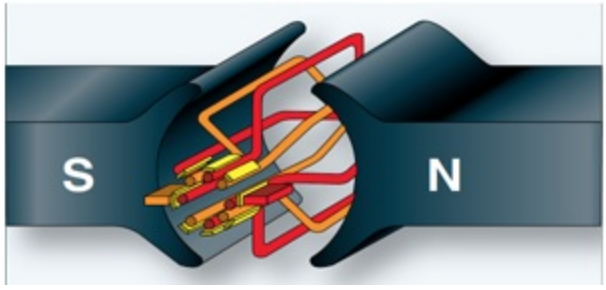
o (a) The armature
o (b) The commutator

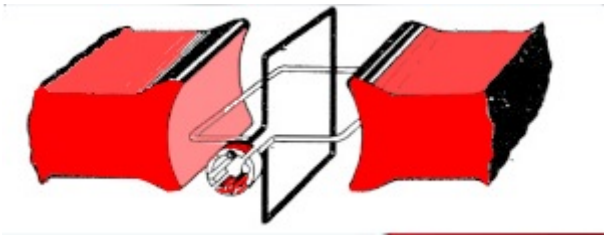
- (c) The yoke

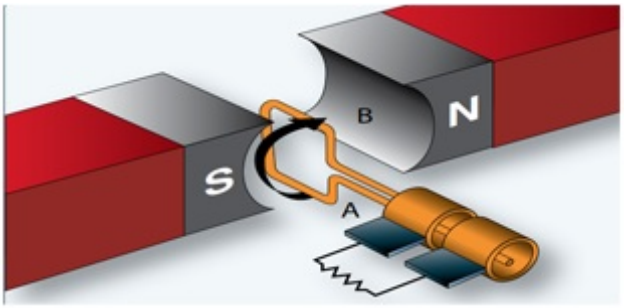
If choice c is selected set score to 1.

318. Which generator would be used to obtain an output as shown in the figure?



o (a) 

• (b) 

o (c) 

If choice b is selected set score to 1.

319. What affects the output polarity of a DC generator?

o (a) The strength of the magnetic field.

• (b) The rotation direction of the armature.

o (c) The angle which the conductor cuts the magnetic field.

If choice b is selected set score to 1.

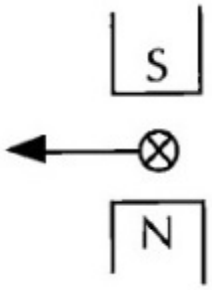
320. What affects the output polarity of a DC generator?

- o (a) The strength of the magnetic field.
- • (b) The direction of the magnetic lines of flux.
- o (c) The angle which the conductor cuts the magnetic field.

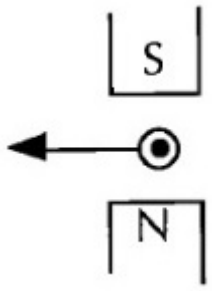
If choice b is selected set score to 1.

321. Which figure depicts the wright line of force of a current conducting wire in a magnetic field?

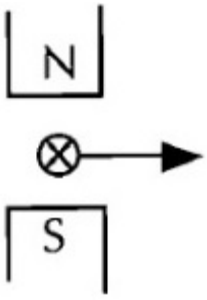
o (a)



• (b)



o (c)



If choice b is selected set score to 1.

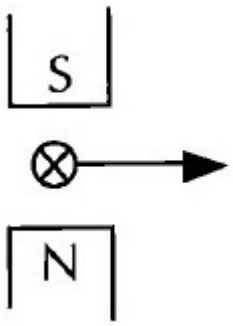
322. What affects the output voltage of a DC generator?

- • (a) The strength of the magnetic field.
- o (b) The direction of the armature rotation.
- o (c) The total length of the conductor.

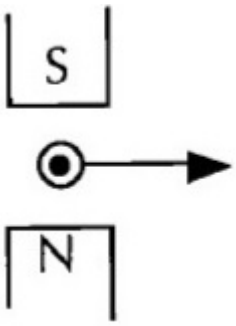
If choice a is selected set score to 1.

323. Which figure depicts the wright line of force of a current conducting wire in a magnetic field?

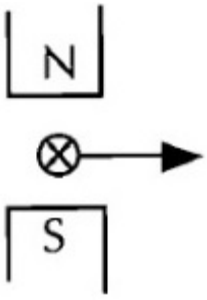
- (a)



o (b)



o (c)



If choice a is selected set score to 1.

324. What affects the output voltage of a DC generator?

- (a) The speed of the armature.

o (b) The direction of the armature rotation.
o (c) The total length of the conductor.

If choice a is selected set score to 1.

325. What affects the output voltage of a DC generator?

- (a) The angle at which the conductor cuts the magnetic field.

o (b) The direction of the armature rotation.
o (c) The total length of the conductor.

If choice a is selected set score to 1.

326. What affects the direction of force and movement of a DC motor?

- (a) The direction of current flow in the armature.

o (b) The strength of the magnetic field.
o (c) The angle at which the conductor cuts the magnetic field.

If choice a is selected set score to 1.

327. What affects the direction of force and movement of a DC motor?

- (a) The direction of the magnetic field.

o (b) The strength of the magnetic field.
o (c) The angle at which the conductor cuts the magnetic field.

If choice a is selected set score to 1.

328. What affects the magnitude of force in a DC motor?

o (a) The direction of the magnetic field.

- (b) The flux density of the magnetic field.

o (c) The total length of the conductor.

If choice b is selected set score to 1.

329. What affects the magnitude of force in a DC motor?

o (a) The direction of the magnetic field.

- (b) The magnitude of the current flow in the armature.

o (c) The total length of the conductor.

If choice b is selected set score to 1.

330. What affects the magnitude of force in a DC motor?

o (a) The direction of the magnetic field.

- (b) The length of the conductor within the magnetic field.

o (c) The distance between the magnetic poles and the armature.

If choice b is selected set score to 1.

331. Which type of armature winding is used on very heavy current DC generators?

o (a) Wave winding.

• (b) Lap winding.

o (c) Can be either wave winding or lap winding.

If choice b is selected set score to 1.

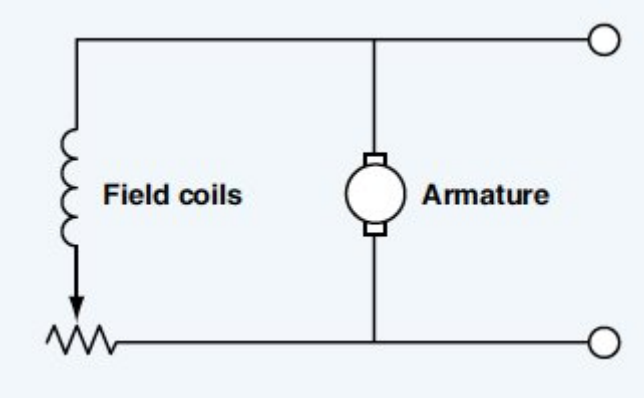
332. What type of windings does a typical starter generator have?

• (a) A series wound motor and a shunt wound generator.

o (b) A compound wound motor and generator.
o (c) A shunt wound motor and a series wound generator.

If choice a is selected set score to 1.

333. What is shown in the figure?



• (a) A shunt wound DC generator.

o (b) A series wound DC generator.
o (c) A series wound DC motor.

If choice a is selected set score to 1.

334. What is the purpose of compensation windings in a generator?

To produce a field...

o (a) that cancels the internal resistance of the generator.

• (b) that cancels the armature field.

o (c) to generate an EMF in the armature windings.

If choice b is selected set score to 1.

335. What is the correct way of connecting inter-poles in a generator?

o (a) In series with the field windings.

• (b) In series with the armature.

o (c) Parallel with the armature.

If choice b is selected set score to 1.

336. What is a disadvantage of increasing the resistance of the brushes of a generator to overcome reactive sparking?

Increase of...

o (a) EMF commutation.
o (b) armature reaction.

• (c) the overall resistance of the generator.

If choice c is selected set score to 1.

337. What causes the armature reaction in a DC generator?

o (a) Sparking at the commutator.
o (b) Shortening of the commutator by the brushes.

• (c) The distortion of the main field.

If choice c is selected set score to 1.

338. What is a solution to overcome reactive sparking in a DC generator?

• (a) To fit inter-poles between the main poles.

o (b) Change the rotation direction of the armature.
o (c) Shortening of the commutator by the brushes.

If choice a is selected set score to 1.

339. How is the field winding of a series DC generator made?

o (a) A few turns of fine wire.

• (b) A few turns heavy gauge wire.

o (c) Many turns of fine wire.

If choice b is selected set score to 1.

340. How is the field winding of a shunt DC generator made?

- o (a) A few turns of fine wire.
- o (b) A few turns heavy gauge wire.
- • (c) Many turns of fine wire.

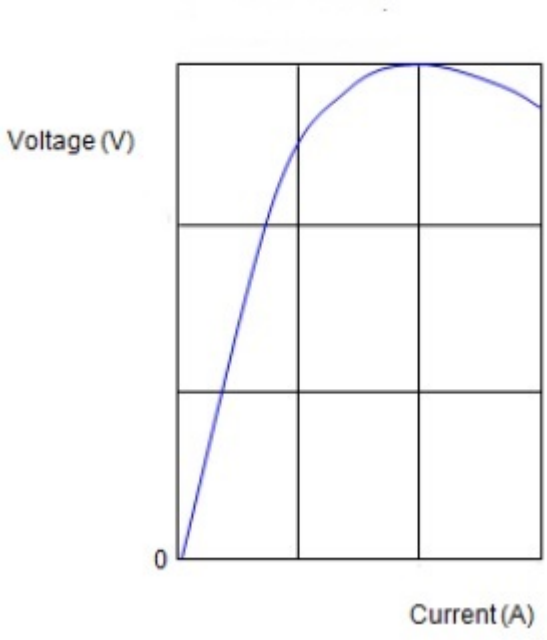
If choice c is selected set score to 1.

341. What generates the output voltage of a series DC generator on "No- load"?

- o (a) The excitation field.
- o (b) The permanent field magnet.
- • (c) The residual magnetism.

If choice c is selected set score to 1.

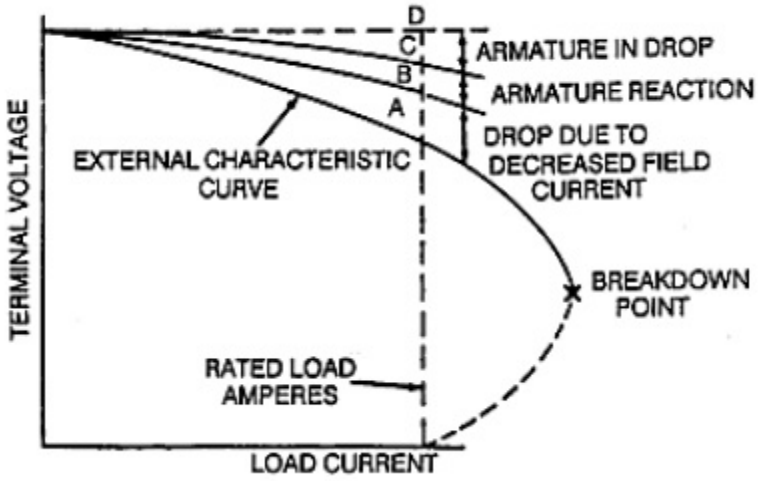
342. Of which kind of generator is this the terminal voltage current graph.



- o (a) Shunt DC generator.
- o (b) A compound DC generator.
- • (c) Series DC generator.

If choice c is selected set score to 1.

343. Of which kind of generator is this the terminal current graph?

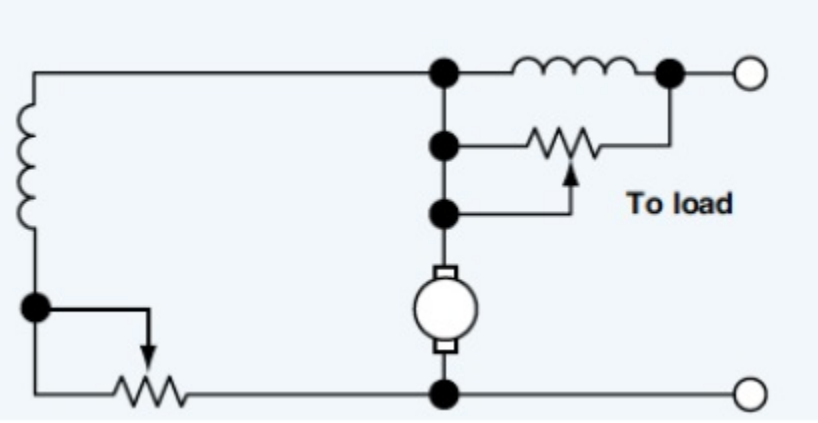


- (a) Shunt DC generator.

o (b) Compound DC generator.
o (c) Series DC generator.

If choice a is selected set score to 1.

344. Which kind of generator is depicted in this circuit diagram?



o (a) Series DC generator.
o (b) Shunt DC generator.

- (c) Compound DC generator.

If choice c is selected set score to 1.

345. A 30V DC motor with an armature resistance of 1Ω has a back EMF of 28V. Calculate the initial armature current in this motor.

o (a) 28A.

• (b) 30A.

o (c) 2A.

If choice b is selected set score to 1.

346. A 30V motor with an armature resistance of 1Ω has a back EMF of 28V. Calculate the armature current during normal operation.

o (a) 30A.
o (b) 28A.

• (c) 2A.

If choice c is selected set score to 1.

347. What happens with the torque of a DC motor if the speed is increased?

The torque...

o (a) will not change.
o (b) will increase.

• (c) will decrease.

If choice c is selected set score to 1.

348. What happens to the torque of a DC motor if the speed is decreased?

The torque...

• (a) will increase.

o (b) will decrease.
o (c) will not change.

If choice a is selected set score to 1.

349. What happens with the speed of a DC motor if the torque on the axis decreases?

The speed....

• (a) will increase.

o (b) will not change.
o (c) will decrease.

If choice a is selected set score to 1.

350. What happens with the speed of a DC motor if the torque on the axis increases?

The speed....

o (a) will increase.

• (b) will decrease.

o (c) will not change.

If choice b is selected set score to 1.

351. What happens with the magnetic neutral axis of a DC motor due to the armature reaction?

The magnetic neutral axis...

• (a) will move against the rotation direction.

o (b) will not move.
o (c) will move in the rotation direction.

If choice a is selected set score to 1.

352. What happens with the magnetic neutral axis of a DC generator due to the armature reaction?

The magnetic neutral axis....

o (a) will move against the rotation direction.

• (b) will move in the rotation direction.

o (c) will not move.

If choice b is selected set score to 1.

353. How can we control the speed of a DC motor?

• (a) By controlling the field current.

o (b) By controlling the number of pole pairs.
o (c) make use of frequency regulation.

If choice a is selected set score to 1.

354. How can we control the speed of a DC motor?

• (a) By controlling the armature current.

o (b) By controlling the number of pole pairs.

o (c) Make use of frequency regulation.

If choice a is selected set score to 1.

355. How is the field winding of a series DC motor made?

o (a) Many turns of fine wire.
o (b) A few turns of fine wire.

• (c) A few turns heavy gauge wire.

If choice c is selected set score to 1.

356. How is the field winding of a series DC motor made?

o (a) A few turns heavy gauge wire.
o (b) A few turns of fine wire.

• (c) Many turns of fine wire.

If choice c is selected set score to 1.

357. What happens with a series DC motor if the load is disconnected?

o (a) Nothing happens.

• (b) Speed becomes dangerously high.

o (c) Speed becomes too low.

If choice b is selected set score to 1.

358. What is the best way to start up a series DC motor?

• (a) With a load connected to the axis.

o (b) Can be either started with or without a load connected to the axis.
o (c) Without a load connected to the axis.

If choice a is selected set score to 1.

359. What is the best way to start up a DC shunt motor?

o (a) With a load connected to the axis.

• (b) Without a load connected to the axis.

o (c) Can be either started with or without a load connected to the axis.

If choice b is selected set score to 1.

360. What is the best way to start up a DC shunt motor?

- (a) Without a load connected to the axis.

o (b) Can be either started with or without a load connected to the axis.
o (c) With a load connected to the axis.

If choice a is selected set score to 1.

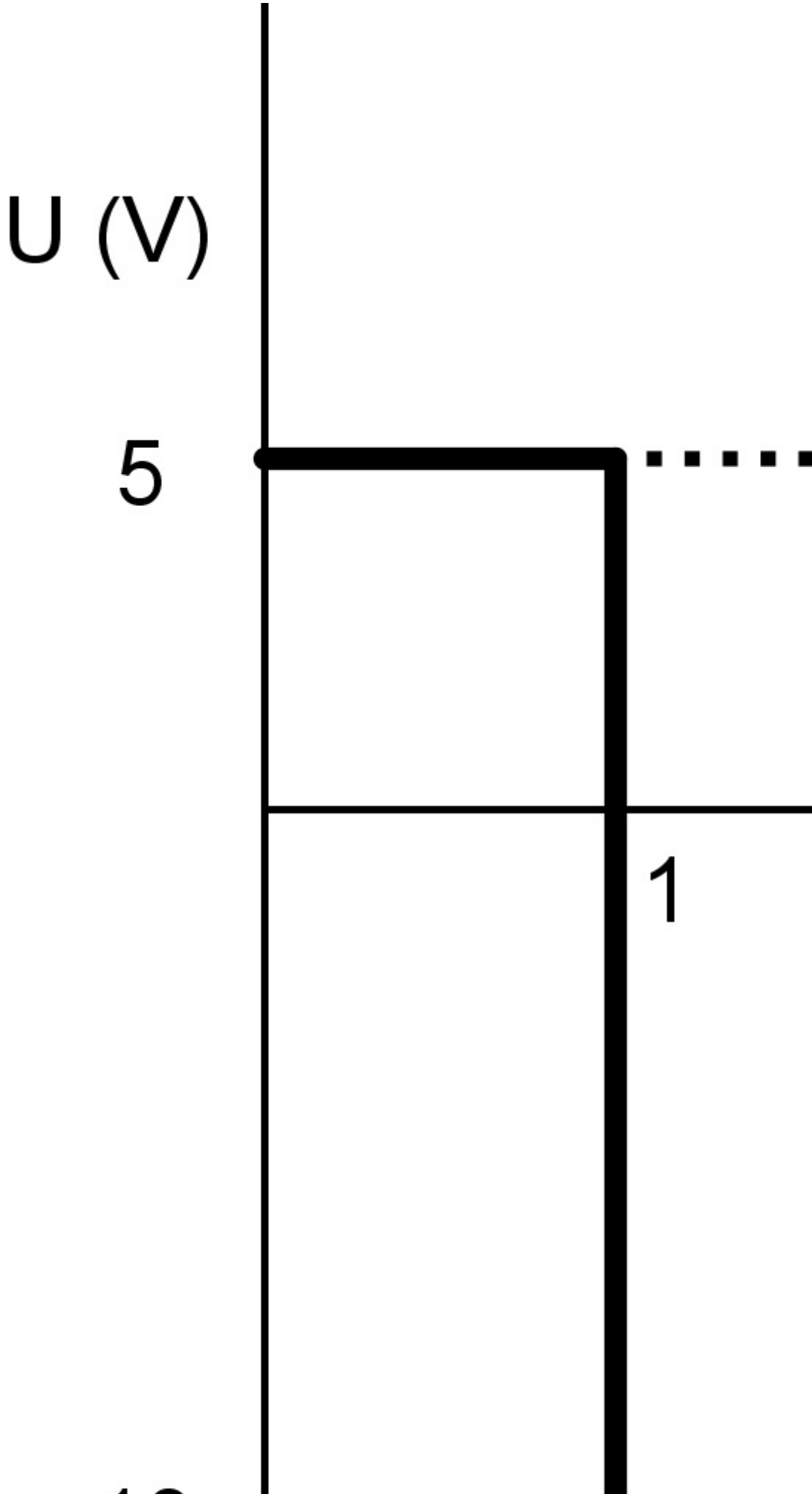
361. What value of an AC signal is used as a comparison to DC?

o (a) Average value.
o (b) Peak to peak value.

- (c) Effective value.

If choice c is selected set score to 1.

362. What is the period of the signal in the picture?


U (V)
5
1

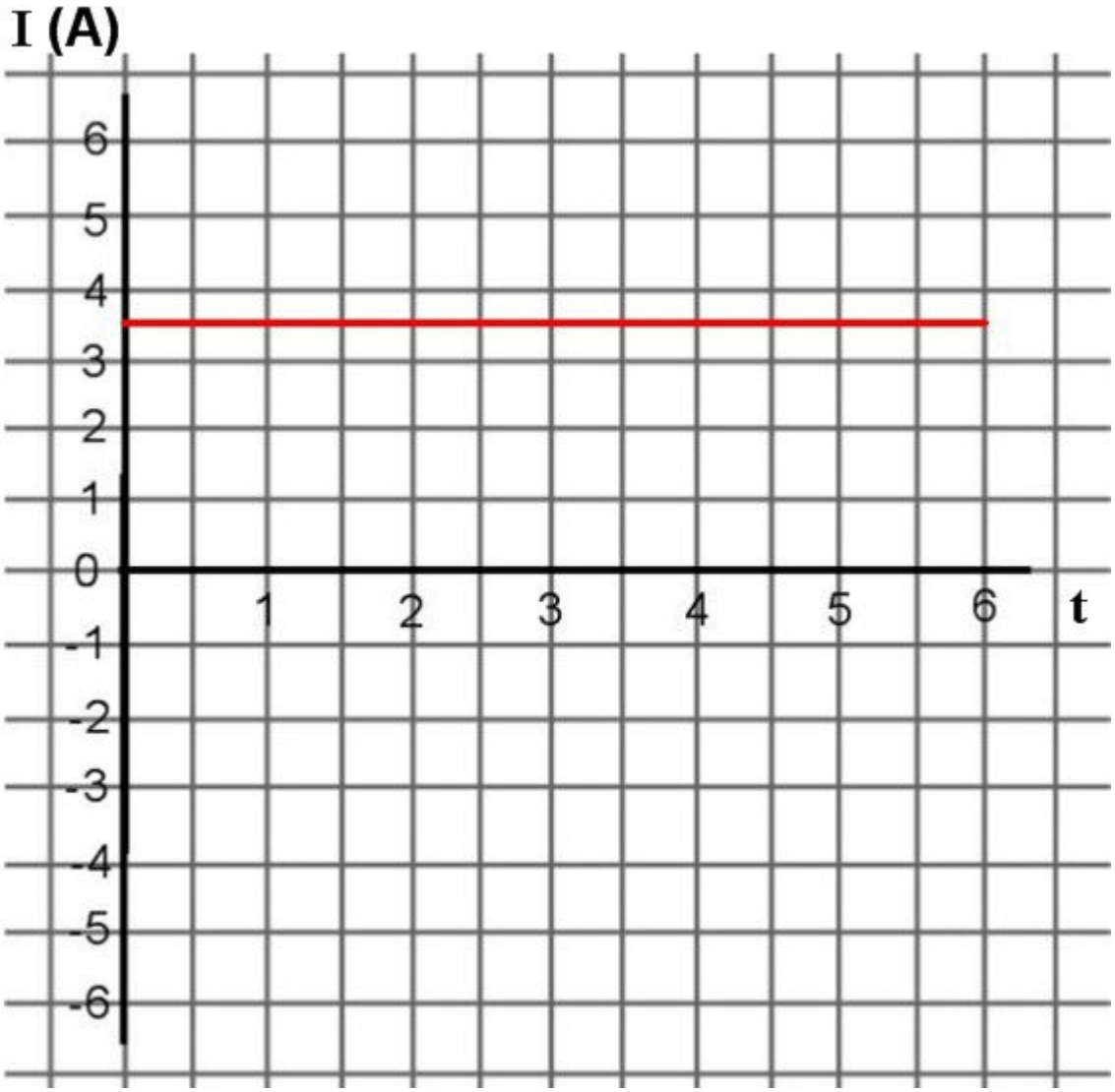
- (a) 2 ms.

o (b) 1 ms.
o (c) 7 ms.

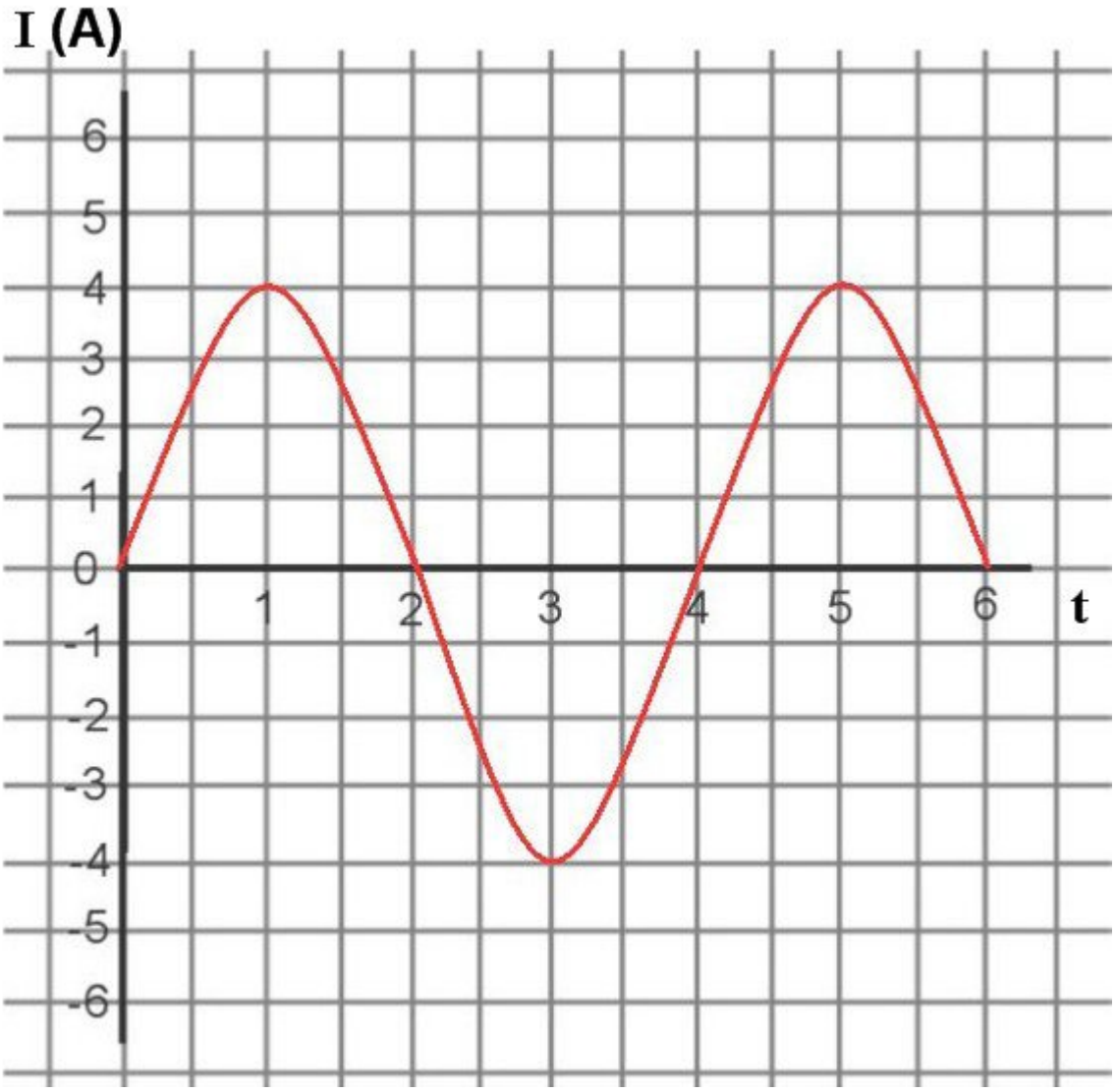
If choice a is selected set score to 1.

363. Which picture depicts an AC current?

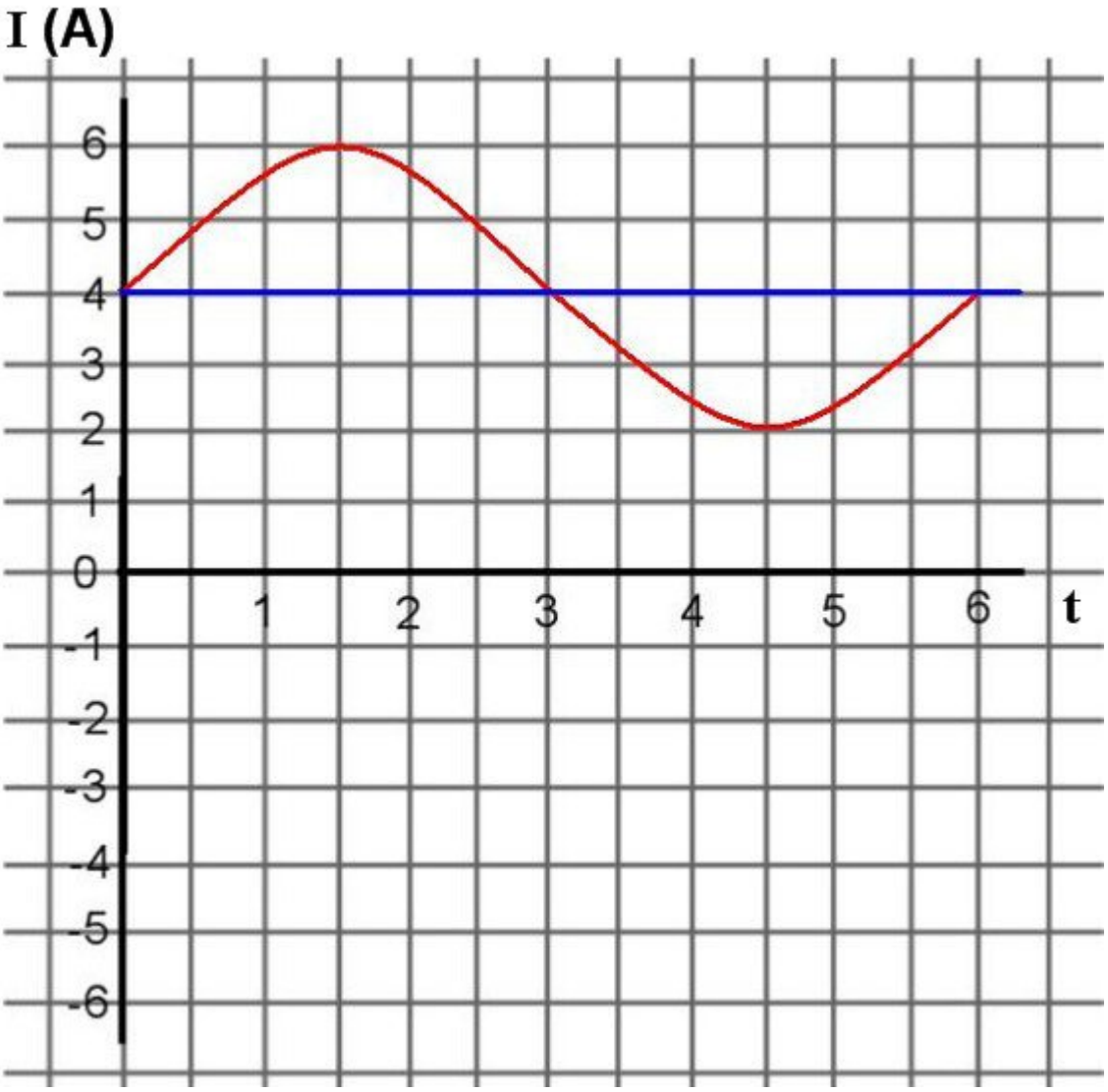
o (a)



- (b)



o (c)



If choice b is selected set score to 1.

364. What is the formula for finding the effective value of a sine wave alternating current?

- (a) $U_{eff} = \frac{\hat{u}}{\sqrt{2}}$
- o (b) $U_{eff} = \hat{u} \cdot \sqrt{2}$
- o (c) $U_{eff} = 0,636 \cdot \hat{u}$

If choice a is selected set score to 1.

365. The angle between successive phases of a three-phase AC supply is....

o (a) 0°

- (b) 120°

o (c) 90°

If choice b is selected set score to 1.

366. What is true for the line voltage of a Y configuration compared to the line voltage of a delta configuration?

The line voltage of a Y configuration is....

o (a) equal to the line voltage of a delta configuration.

- (b) higher than the line voltage of a delta configuration.

o (c) lower than the line voltage of a delta configuration.

If choice b is selected set score to 1.

367. What is true for the line voltage of a Y configuration compared to the phase voltage?

o (a) $U_L = \frac{U_f}{\sqrt{2}}$

o (b) $U_L = U_f$

- (c) $U_L = U_f \cdot \sqrt{3}$

If choice c is selected set score to 1.

368. When an sinusoidal alternating current is at 270 degrees, what is the current value?

- (a) Negative maximum.

o (b) Positive maximum.
o (c) Zero

If choice a is selected set score to 1.

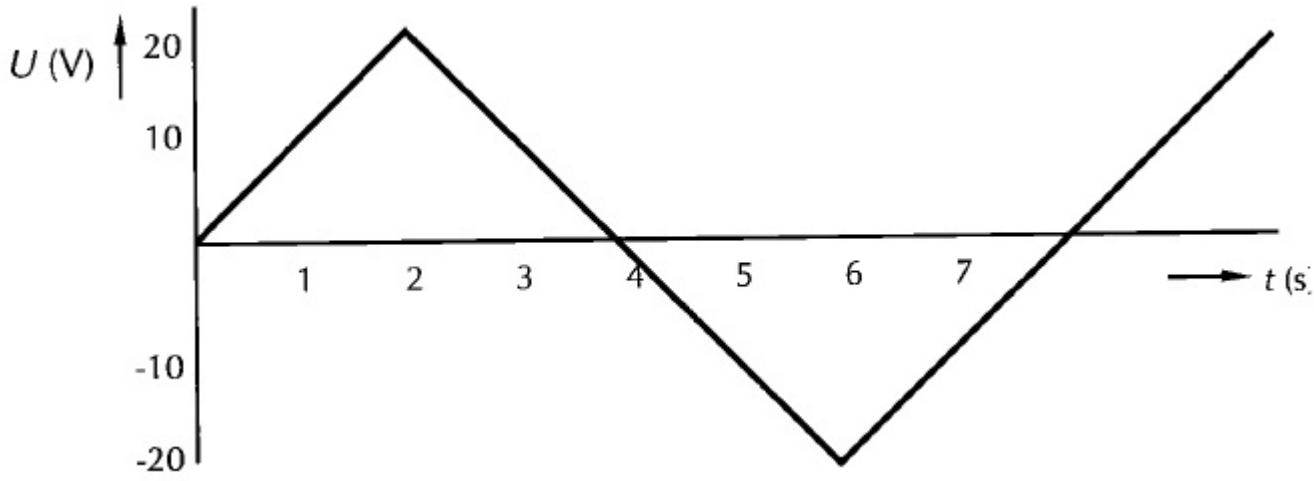
369. The term "frequency" indicates the number of complete wave cycles per....

- (a) second.

o (b) hour.
o (c) minute.

If choice a is selected set score to 1.

370. What is the period of the signal in the picture?



o (a) 4 s.

- (b) 8 s.

o (c) 2 s.

If choice b is selected set score to 1.

371. An AC signal has a period of 2 seconds. Calculate the frequency of this signal.

o (a) 2 Hz.
o (b) 4 Hz.

- (c) 0,5 Hz.

If choice c is selected set score to 1.

372. Which formula is used to calculate the frequency of a signal by making use of the period time?

o (a) $T = \frac{1}{f}$

- (b) $f = \frac{1}{T}$

o (c) $f = \frac{1}{2\pi T}$

If choice b is selected set score to 1.

373. Which formula is used to calculate the period of a signal by making use of the frequency?

o (a) $f = \frac{1}{T}$

o (b) $T = \frac{1}{2\pi f}$

• (c) $T = \frac{1}{f}$

If choice c is selected set score to 1.

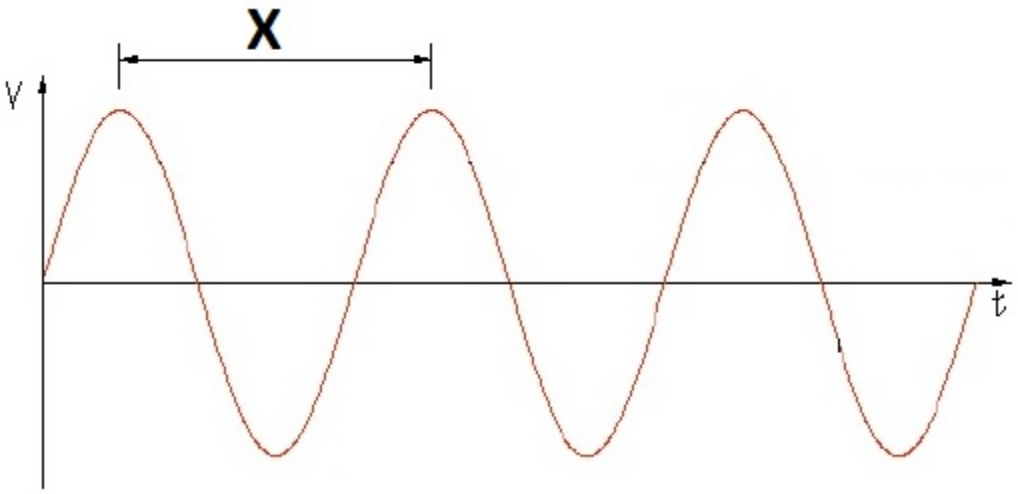
374. What is the unit of frequency?

• (a) Hertz.

o (b) Radials per second.
o (c) Seconds.

If choice a is selected set score to 1.

375. Which AC measurement is marked with an X in this graph?



o (a) Frequency.

• (b) Period.

o (c) Peak to Peak voltage.

If choice b is selected set score to 1.

376. What voltage is used for power calculations for AC circuits?

o (a) Peak voltage.

o (b) Average voltage.

• (c) Effective voltage.

If choice c is selected set score to 1.

377. What is the mathematical average of a sinusoidal wave form?

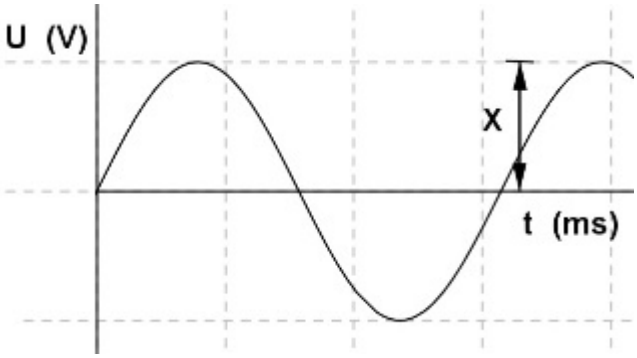
o (a) 63% of maximum

• (b) Zero

o (c) 50% of maximum

If choice b is selected set score to 1.

378. Which measurement of AC magnitude is marked in the figure with an X?



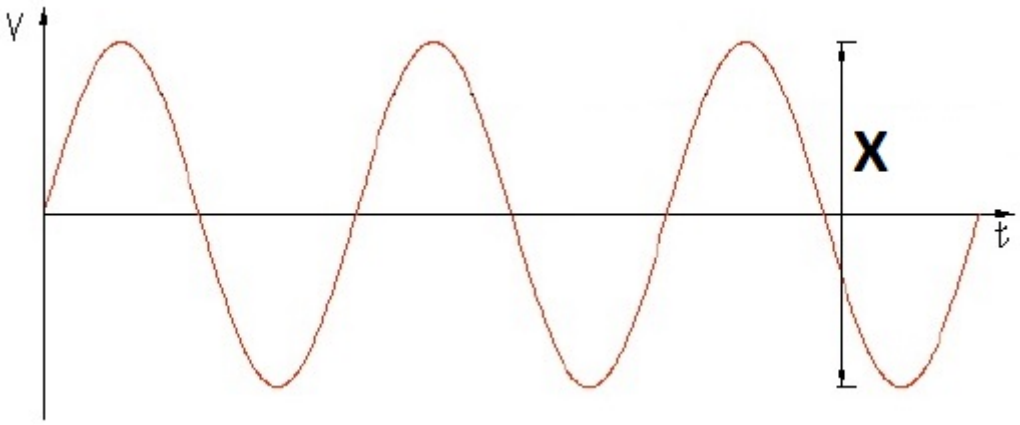
o (a) Peak to Peak amplitude.

• (b) Peak amplitude.

o (c) Instantaneous voltage.

If choice b is selected set score to 1.

379. Which measurement of AC magnitude is marked in the figure with an X?



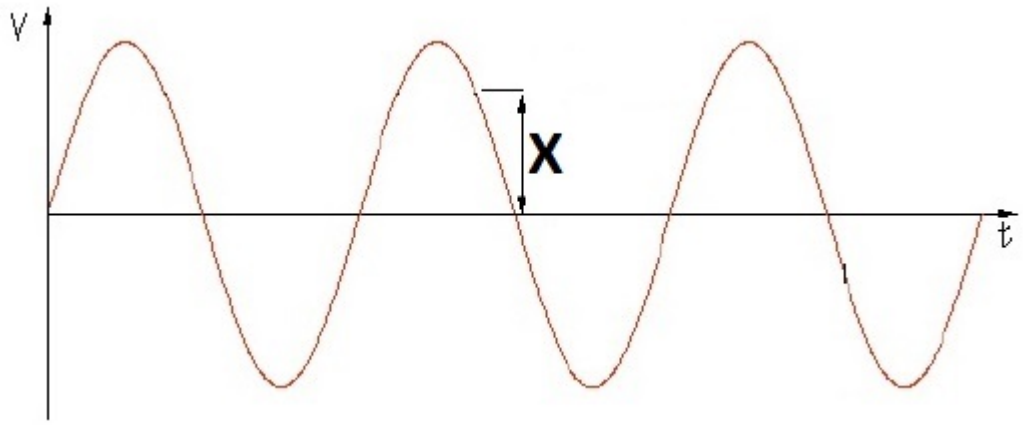
o (a) Instantaneous voltage.

- (b) Peak to Peak amplitude.

o (c) Peak amplitude.

If choice b is selected set score to 1.

380. Which measurement of AC magnitude is marked in the figure with an X?



- (a) Instantaneous voltage.

o (b) Peak to Peak amplitude.
o (c) Peak amplitude.

If choice a is selected set score to 1.

381. What is the formula for finding the effective value of a sine wave alternating voltage?

o (a) $U_{eff} = 0,636 \cdot \hat{u}$

- (b) $U_{eff} = \hat{u} \cdot \sqrt{2}$
- (c) $U_{eff} = \frac{\hat{u}}{\sqrt{2}}$

If choice c is selected set score to 1.

382. Which formula is used to calculate the average voltage of a sine wave AC voltage?

- (a) $U_{av} = \hat{u} \cdot \sqrt{2}$
- (b) $U_{av} = \frac{\hat{u}}{\sqrt{2}}$
- (c) $U_{av} = 0,636 \cdot \hat{u}$

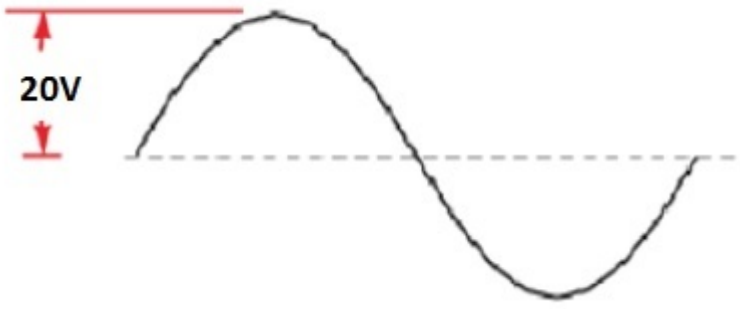
If choice c is selected set score to 1.

383. Which formula is used to calculate the peak voltage of a sine wave AC voltage?

- (a) $\hat{u} = \frac{U_{eff}}{\sqrt{2}}$
- (b) $\hat{u} = U_{eff} \cdot \sqrt{2}$
- (c) $\hat{u} = 0,636 \cdot U_{eff}$

If choice b is selected set score to 1.

384. What is the RMS voltage of this signal?

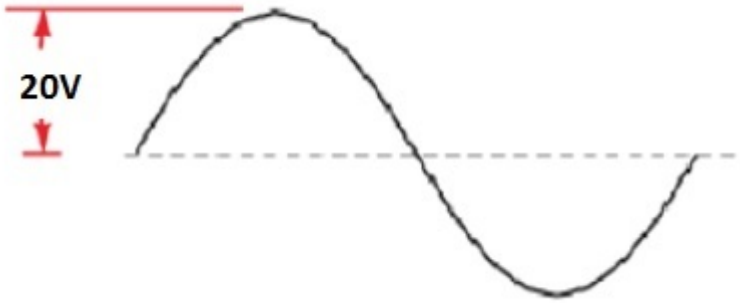


- (a) $20V$
- (b) $\frac{20}{\sqrt{2}} V$

- (c) $20 \cdot \sqrt{2} V$

If choice b is selected set score to 1.

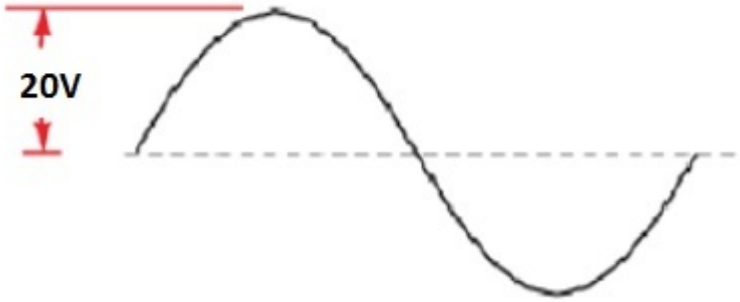
385. What is the average voltage of this signal?



- (a) 20 V
- (b) $\frac{20}{\sqrt{2}} V$
- (c) 20×0,636 V

If choice c is selected set score to 1.

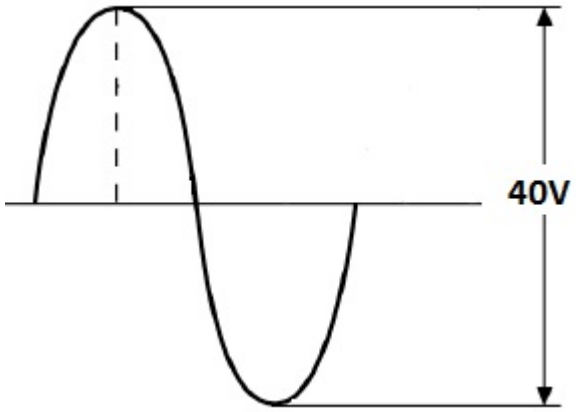
386. What is the Peak to Peak voltage of this signal?



- (a) $20V$
- (b) $40V$
- (c) $\frac{20}{\sqrt{2}} V$

If choice b is selected set score to 1.

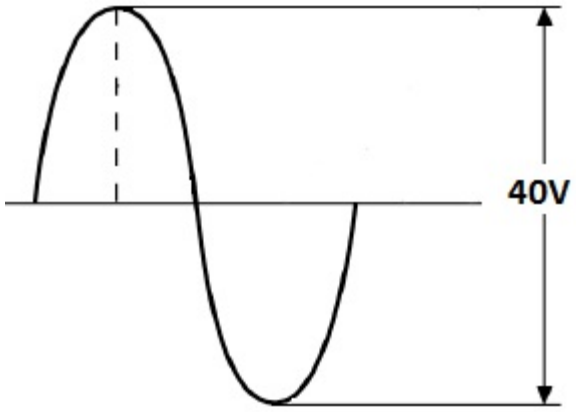
387. What is the Peak to Peak voltage of this signal?



- o (a) $\frac{20}{\sqrt{2}}V$
- • (b) $40V$
- o (c) $20V$

If choice b is selected set score to 1.

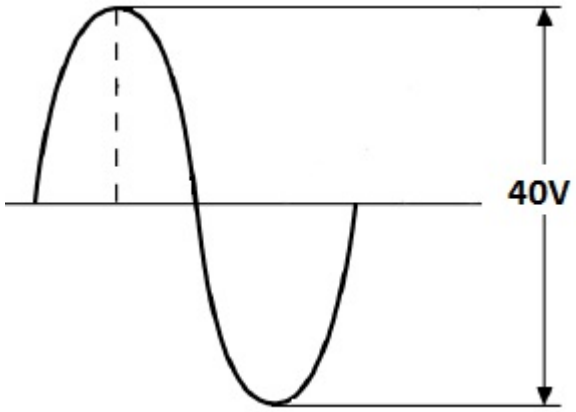
388. What is the average voltage of this signal?



- • (a) 20×0,636 V
- o (b) 20 V
- o (c) $\frac{20}{\sqrt{2}}V$

If choice a is selected set score to 1.

389. What is the RMS voltage of this signal?



o (a) $20V$

- (b) $\frac{20}{\sqrt{2}}V$

o (c) $20 \cdot \sqrt{2}V$

If choice b is selected set score to 1.

390. What is the Peak to Peak voltage of this signal?

o (a) $10V$

- (b) $20V$

o (c) $\frac{10}{\sqrt{2}}V$

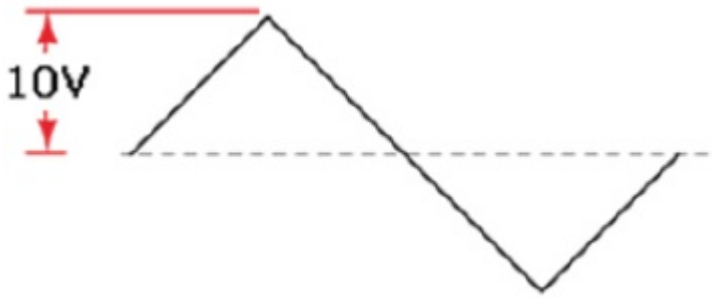
If choice b is selected set score to 1.

391. What is the Peak voltage of this signal?

- (a) $10V$
- (b) $\frac{10}{\sqrt{2}}V$
- (c) $5V$

If choice a is selected set score to 1.

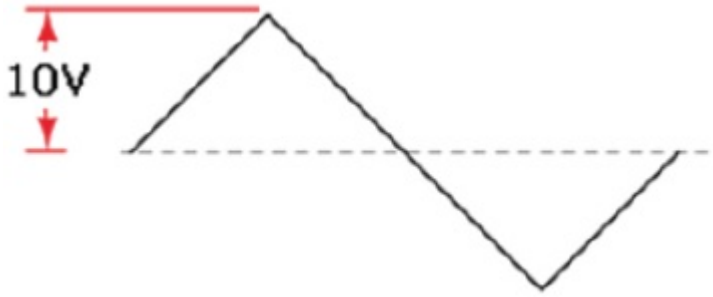
392. What is the Peak to Peak voltage of this signal?



- (a) $\frac{10}{\sqrt{2}}V$
- (b) $10V$
- (c) $20V$

If choice c is selected set score to 1.

393. What is the peak voltage of this signal?



- (a) $10V$
- (b) $\frac{10}{\sqrt{2}}V$
- (c) $5V$

If choice a is selected set score to 1.

394. What is the best way to relate AC signals with DC signals?

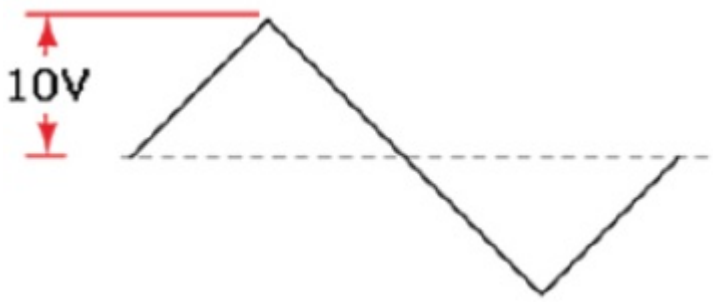
To measure....

- (a) the peak to peak amplitude.
- (b) the RMS amplitude.
- (c) the average amplitude.

If choice b is selected set score to 1.

395. This voltage is connected to a resistor. For a power calculation you have to measure this voltage.

Which kind of voltmeter do you have to use?



- (a) Analogue meter.

- (b) True RMS meter.

o (c) Multimeter.

If choice b is selected set score to 1.

396. What is the relation between line voltage and phase voltage of a star configuration?

- (a) $U_L = \frac{U_f}{\sqrt{2}}$

o (b) $U_L = U_f$

o (c) $U_L = U_f \cdot \sqrt{3}$

If choice a is selected set score to 1.

397. What is the relation between line voltage and phase voltage of a delta configuration?

o (a) $U_L = \frac{U_f}{\sqrt{2}}$

o (b) $U_L = U_f \cdot \sqrt{3}$

- (c) $U_L = U_f$

If choice c is selected set score to 1.

398. What is the relation between line current and phase current of a delta configuration?

- (a) $I_L = I_f \cdot \sqrt{3}$

o (b) $I_L = I_f$

o (c) $I_L = \frac{I_f}{\sqrt{2}}$

If choice a is selected set score to 1.

399. What is the relation between line current and phase current of a Y configuration?

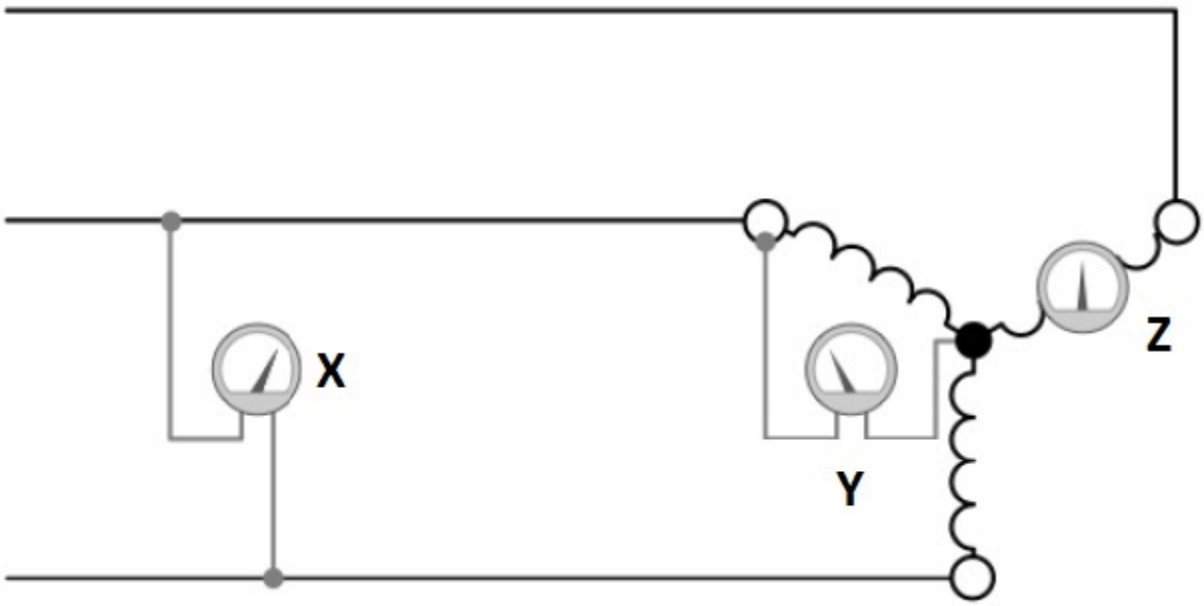
- (a) $I_L = I_f$

o (b) $I_L = I_f \cdot \sqrt{3}$

o (c) $I_L = \frac{I_f}{\sqrt{2}}$

If choice a is selected set score to 1.

400. Which meter indicates the line voltage?

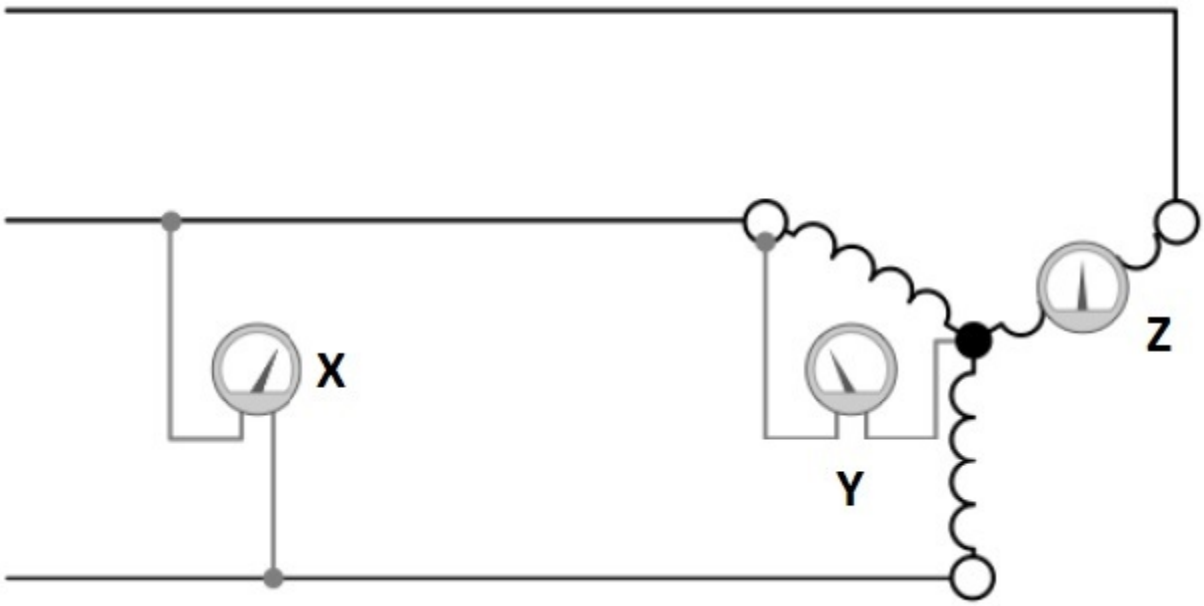


- (a) Meter X.

o (b) Meter Z.
o (c) Meter Y.

If choice a is selected set score to 1.

401. Which meter indicates the phase voltage?

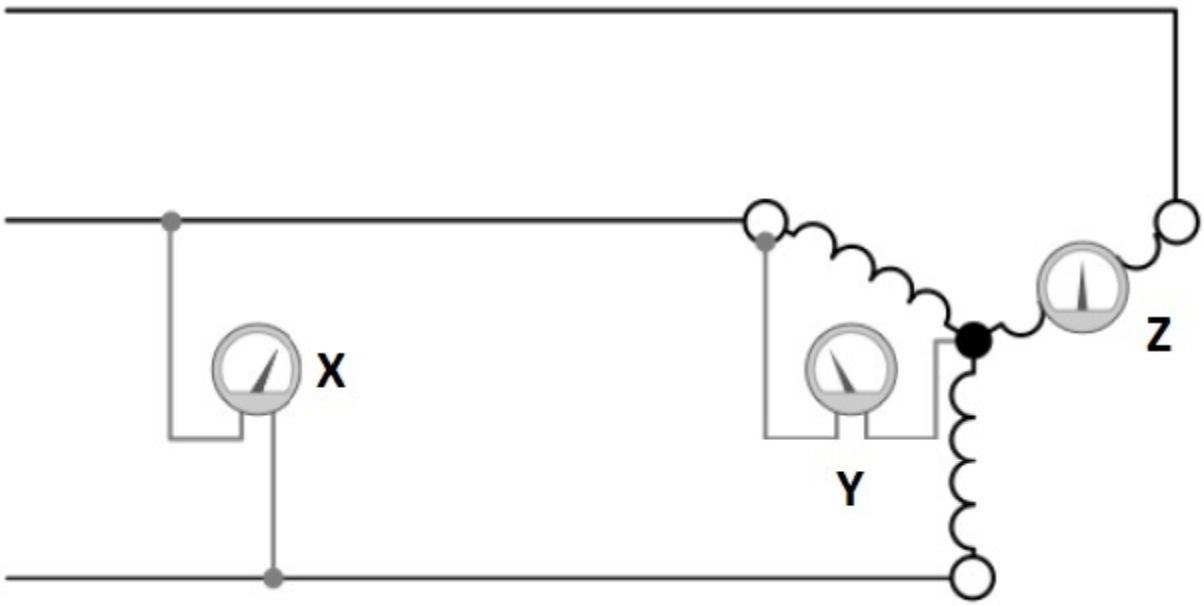


o (a) Meter Z.
o (b) Meter X.

- (c) Meter Y.

If choice c is selected set score to 1.

402. Which meter indicates the phase current?



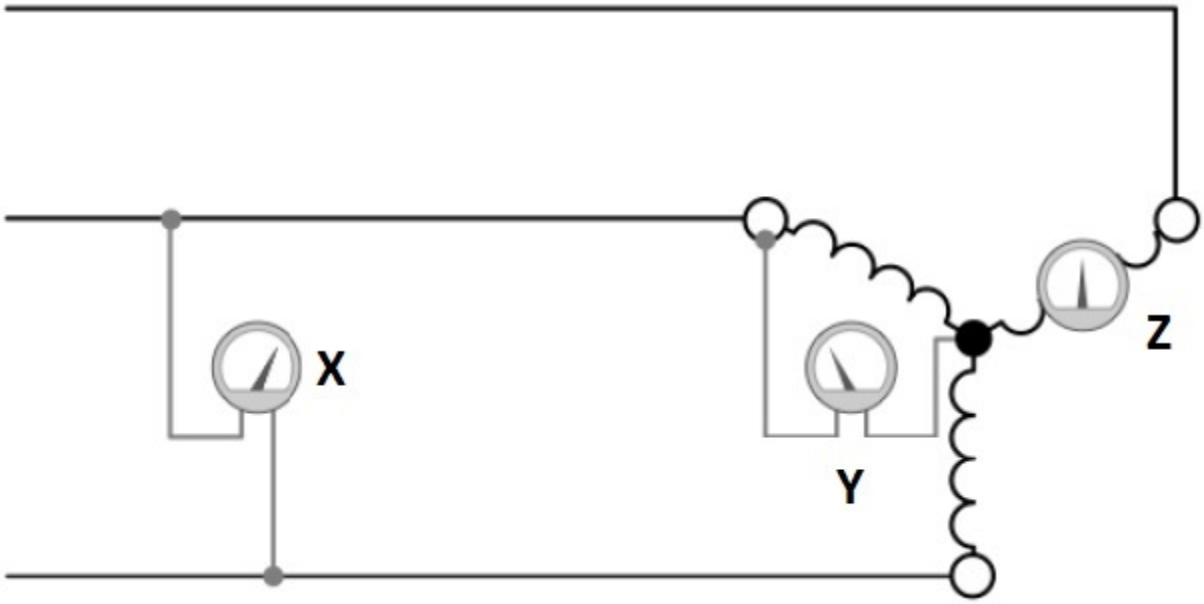
o (a) Meter Y.

o (b) Meter X.

- (c) Meter Z.

If choice c is selected set score to 1.

403. Which meter indicates the line current?

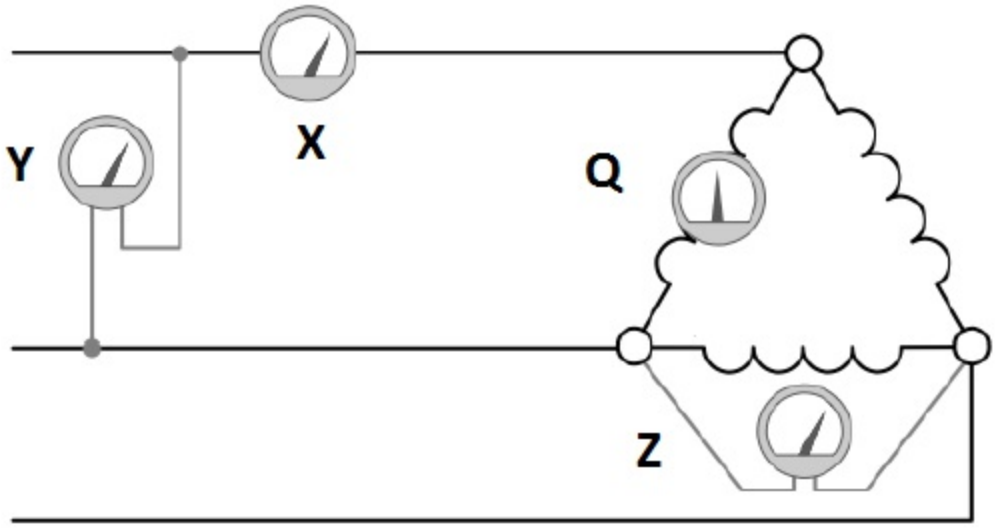


- (a) Meter Z.

o (b) Meter X.
o (c) Meter Y.

If choice a is selected set score to 1.

404. Which meter indicates the line current?

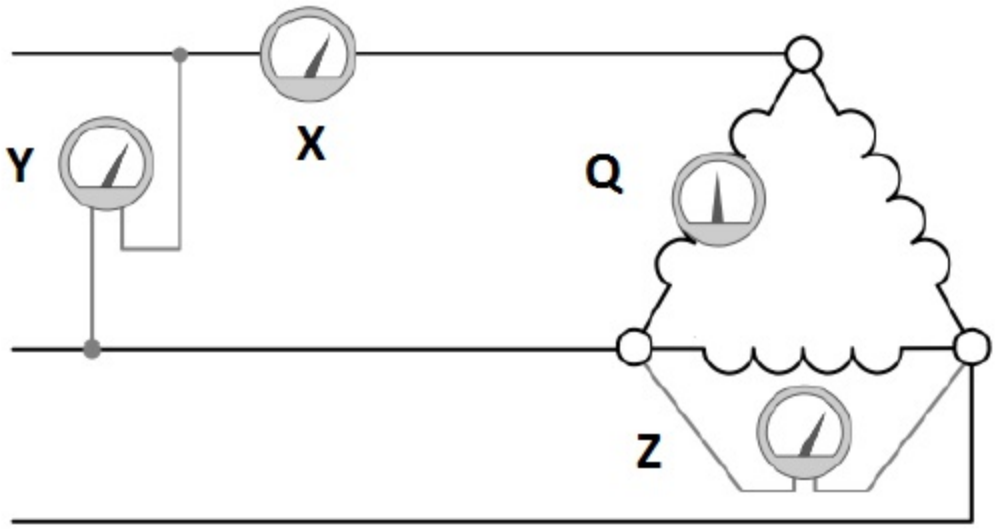


- (a) Meter X.

o (b) Meter Q.
o (c) Meter Y.

If choice a is selected set score to 1.

405. Which meter indicates the phase current?

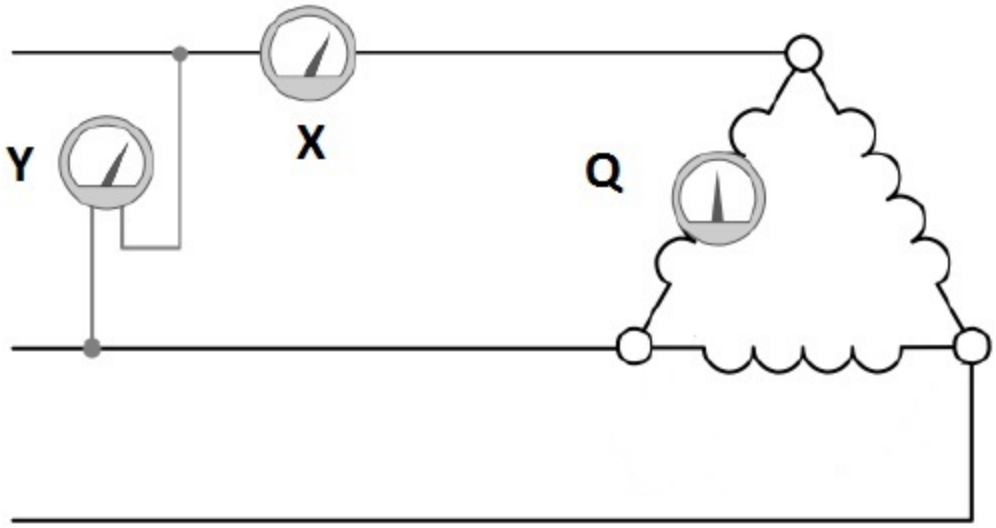


o (a) Meter Z.
o (b) Meter X.

- (c) Meter Q.

If choice c is selected set score to 1.

406. Which meter indicates the line voltage?



- (a) Meter Y.

o (b) Meter Q.
o (c) Meter X.

If choice a is selected set score to 1.

407. The impressed voltage of a capacitive load is out of phase with the applied load by?

- (a) 180 degrees

o (b) 90 degrees
o (c) 0 degrees

If choice a is selected set score to 1.

408. An inductive load will cause the current to....

o (a) remain in phase with the voltage.
o (b) lead the applied voltage by 90 degrees.

- (c) lag the applied voltage by 90 degrees

If choice c is selected set score to 1.

409. Heat is produced when a circuit contains....

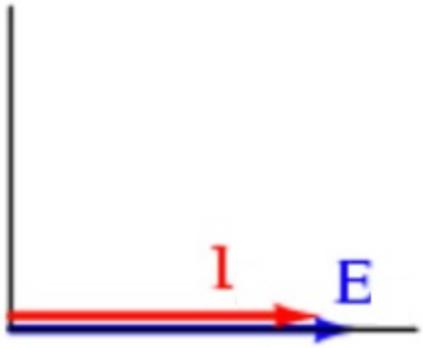
o (a) an inductive load.

- (b) a resistive load.

o (c) a capacitive load.

If choice b is selected set score to 1.

410. To which circuit, connected on a sine wave AC source belongs this phasor diagram?

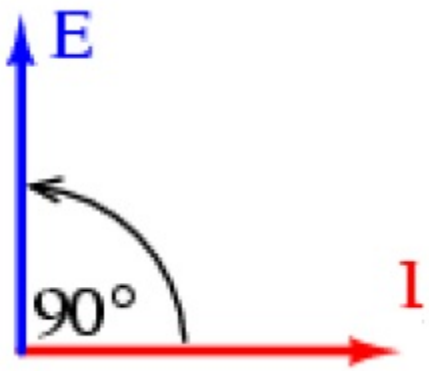


- (a) Resistor

o (b) Capacitor
o (c) Inductor

If choice a is selected set score to 1.

411. To which circuit, connected on a sine wave AC source belongs this phasor diagram?

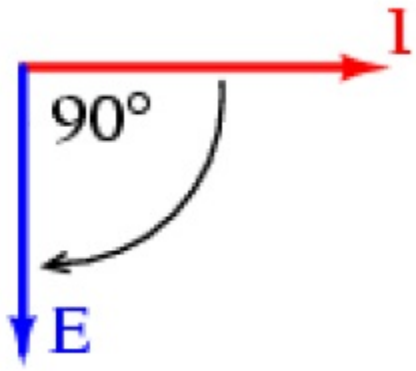


o (a) Resistor
o (b) Capacitor

- (c) Inductor

If choice c is selected set score to 1.

412. To which circuit, connected on a sine wave AC source belongs this phasor diagram?



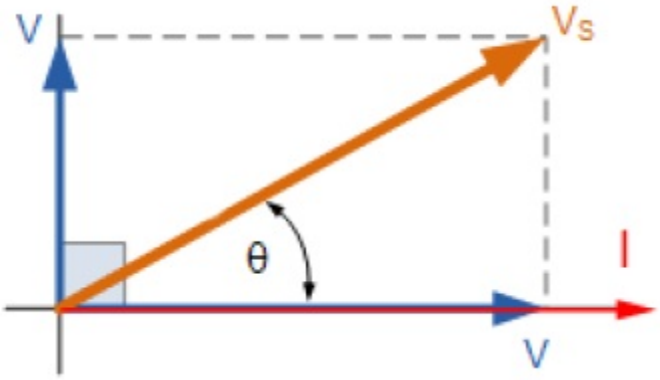
o (a) Inductor

• (b) Capacitor

o (c) Resistor

If choice b is selected set score to 1.

413. To which circuit, connected on a sine wave AC source belongs this phasor diagram?

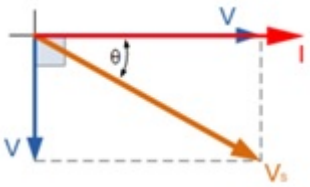


o (a) Inductor.
o (b) Capacitor and resistor in series.

• (c) Inductor and resistor in series.

If choice c is selected set score to 1.

414. To which circuit, connected on a sine wave AC source belongs this phasor diagram?



o (a) Inductor and resistor in series.

• (b) Capacitor and resistor in series.

o (c) Capacitor.

If choice b is selected set score to 1.

415. In which type of circuit is the power always positive?

o (a) A capacitive circuit.

• (b) A resistive circuit.

o (c) An inductive circuit.

If choice b is selected set score to 1.

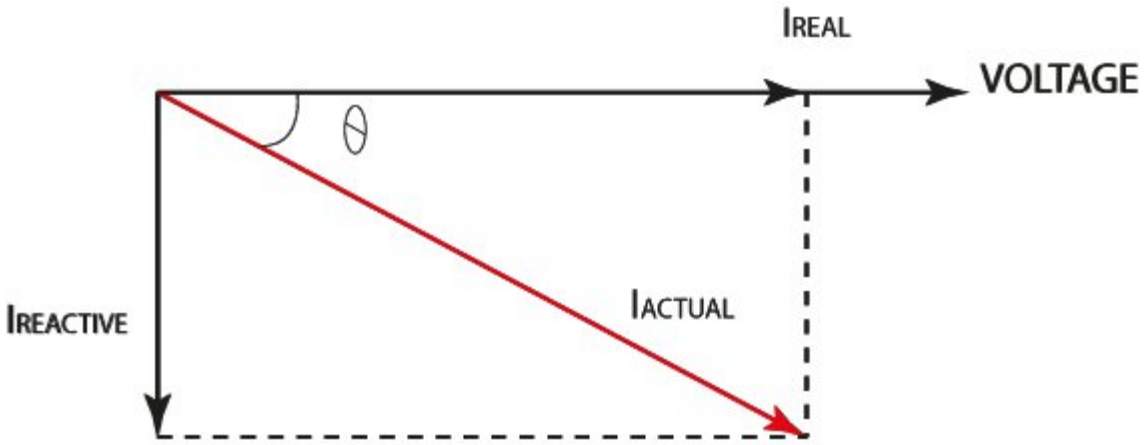
416. What is impedance?

o (a) The opposition to current flow in a DC circuit.
o (b) The opposition to voltage in an AC circuit.

• (c) The opposition to current flow in a AC circuit.

If choice c is selected set score to 1.

417. The angle which the actual load current makes with the supply voltage, as shown in the figure is known as?



- o (a) The effective angle.
- o (b) The power angle.
- • (c) The power factor.

If choice c is selected set score to 1.

418. Typical ratio for current transformer is....

- o (a) 1 to 100
- • (b) 1 to 1000
- o (c) 1000 to 1

If choice b is selected set score to 1.

419. The current transformer is a....

- o (a) ring dual-type transformer.
- • (b) ring-type transformer.
- o (c) dual wire magnetic transformer.

If choice b is selected set score to 1.

420. Current transformers are used in....

- • (a) generator control circuits.
- o (b) ESD protection.
- o (c) fuel level indication systems.

If choice a is selected set score to 1.

421. For a Transformer the Frequency has....

- o (a) no influence on the construction of the transformer size/weight.
- o (b) no influence for core losses /weight.
- • (c) an influence on the construction of a transformer size/weight.

If choice c is selected set score to 1.

422. The sides of all current transformers are marked "H1" and "H2" on the unit base. The transformers must be installed with the "H1" side...

- o (a) toward the generator in the circuit in order to have proper load.
- • (b) toward the generator in the circuit in order to have proper polarity.
- o (c) backward the generator in the circuit in order to have proper polarity.

If choice b is selected set score to 1.

423. The primary line current of a three phase transformer, without losses, connected in a Y is $^{10}/_{\sqrt{3}}$ A.

Calculate the secondary power if the primary phase voltage equals to 10V.

- o (a) 100 W
- o (b) 300 W
- • (c) $^{300}/_{\sqrt{3}}$ W

If choice c is selected set score to 1.

424. The secondary power of a three phase transformer, without losses, connected in a Y is 300 W.

Calculate the primary current if the primary phase voltage equals to 10 V.

- o (a) $^{10}/_{\sqrt{3}}$ A
- • (b) 10 A
- o (c) 30 A

If choice b is selected set score to 1.

425. The primary line current of a three phase transformer, without losses, connected in a Y is $^{10}/_{\sqrt{3}}$ A.

Calculate the primary power if the primary phase voltage equals to 10 V.

o (a) 100 W

• (b) $^{300}/_{\sqrt{3}}$ W

o (c) 300 W

If choice b is selected set score to 1.

426. A step-up transformer has a 1 to 4 turns ratio....

o (a) 2 turns primary and 4 turns secondary.

• (b) 2 turns primary and 8 turns secondary.

o (c) 8 turns primary and 2 turns secondary.

If choice b is selected set score to 1.

427. A transformer has a ratio from 1 to 100. A current flow 10A in the primary lead. The secondary current will be?

o (a) 1000 A
o (b) 100 A

• (c) 0,1 A

If choice c is selected set score to 1.

428. N1 has 1600 windings, N2 has 400 windings, what is the transformer ratio?

o (a) 1 to 4

• (b) 4 to 1

o (c) 4 to 16

If choice b is selected set score to 1.

429. What type of filter is commonly used in microphone circuits?

• (a) High pass filter.

o (b) Band stop filter.
o (c) Band pass filter.

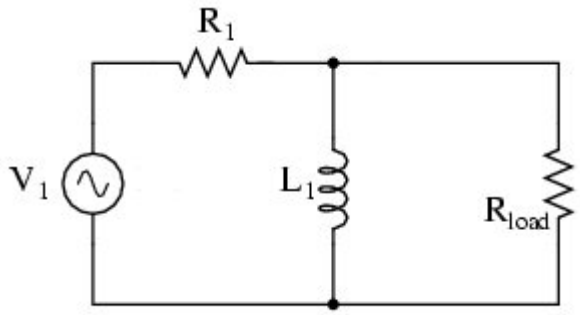
If choice a is selected set score to 1.

430. What is the "cut-off frequency" of a HP filter?

- o (a) The frequency at which the filter stops working.
- o (b) The frequency at which the filter will destroy itself.
- • (c) The frequency at which the filter starts to filter.

If choice c is selected set score to 1.

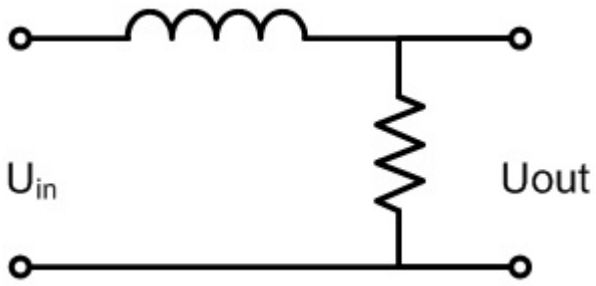
431. What type of filter is shown in the figure?



- • (a) High pass filter.
- o (b) Low pass filter.
- o (c) Band stop filter.

If choice a is selected set score to 1.

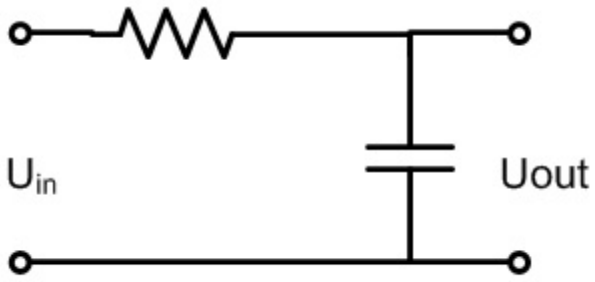
432. This is the circuit diagram of a....



- o (a) Band Pass Filter
- o (b) High Pass Filter
- • (c) Low Pass Filter

If choice c is selected set score to 1.

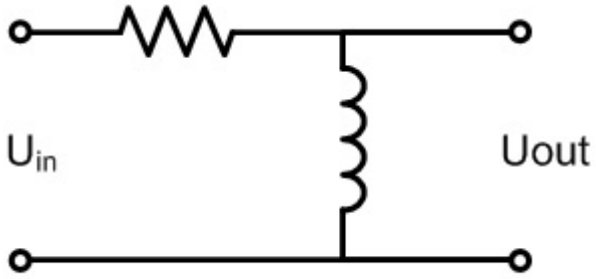
433. This is the circuit diagram of a....



- o (a) Band Pass Filter
- • (b) Low Pass Filter
- o (c) High Pass Filter

If choice b is selected set score to 1.

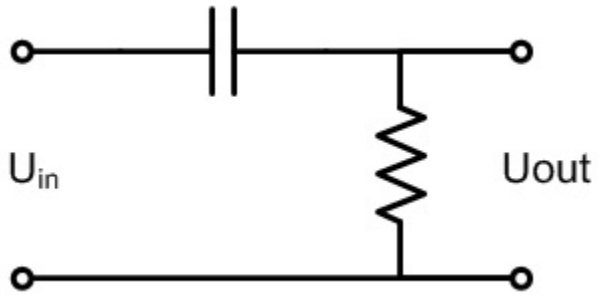
434. This is the circuit diagram of a....



- • (a) High Pass Filter
- o (b) Low Pass Filter
- o (c) Band Pass Filter

If choice a is selected set score to 1.

435. This is the circuit diagram of a....

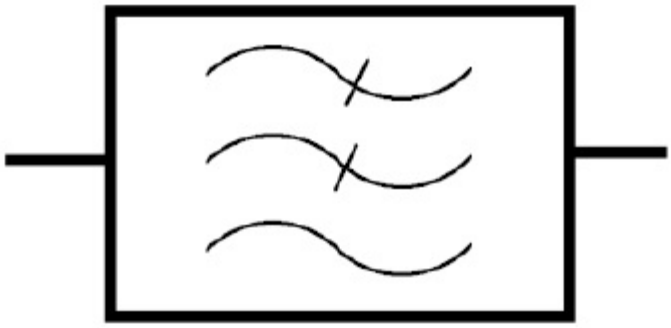


- (a) High Pass Filter

o (b) Low Pass Filter
o (c) Band Pass Filter

If choice a is selected set score to 1.

436. This is the symbol of a....

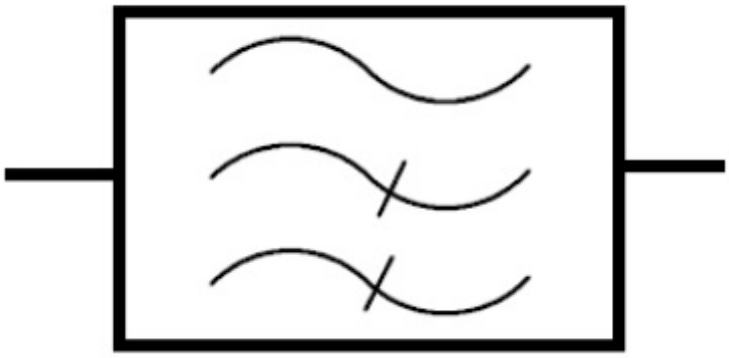


- (a) Low Pass Filter

o (b) Band Pass Filter
o (c) High Pass Filter

If choice a is selected set score to 1.

437. This is the symbol of a....

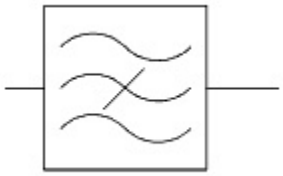


- o (a) Low Pass Filter
- o (b) Band Pass Filter

- • (c) High Pass Filter

If choice c is selected set score to 1.

438. This is the symbol of a....

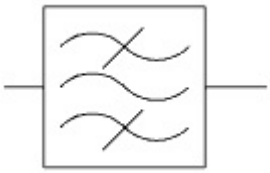


- • (a) Band Stop Filter

- o (b) High Pass Filter
- o (c) Band Pass Filter

If choice a is selected set score to 1.

439. This is the symbol of a....



- o (a) Band Stop Filter
- o (b) Low Pass Filter

- (c) Band Pass Filter

If choice c is selected set score to 1.

440. A band pass filter can be constructed with....

o (a) 2 low pass filters.

- (b) a low pass and high pass filter.

o (c) 2 high pass filters.

If choice b is selected set score to 1.

441. What type of filter can be created with a low pass and a high pass filter switched parallel?

- (a) A band stop filter.

o (b) An inductive RL filter.
o (c) A band pass filter.

If choice a is selected set score to 1.

442. What is an Alternator?

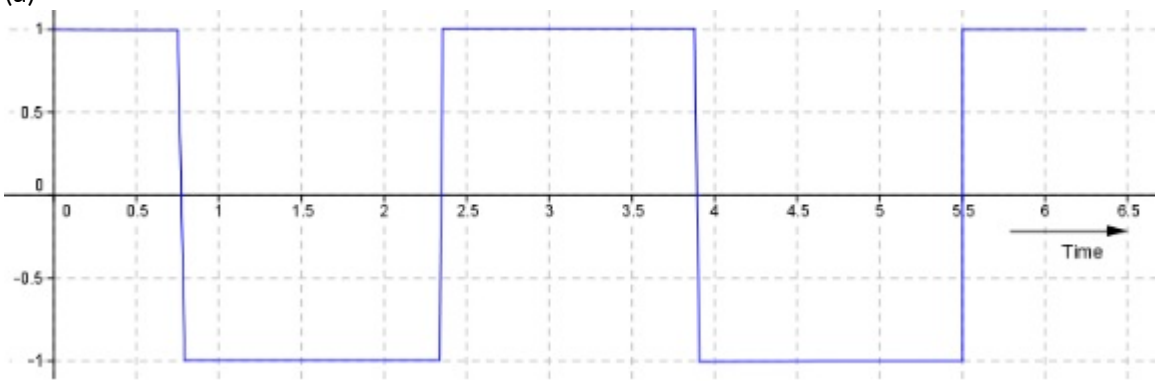
- (a) It is an AC Generator.

o (b) It is an AC to DC converter.
o (c) It is an AC powered motor.

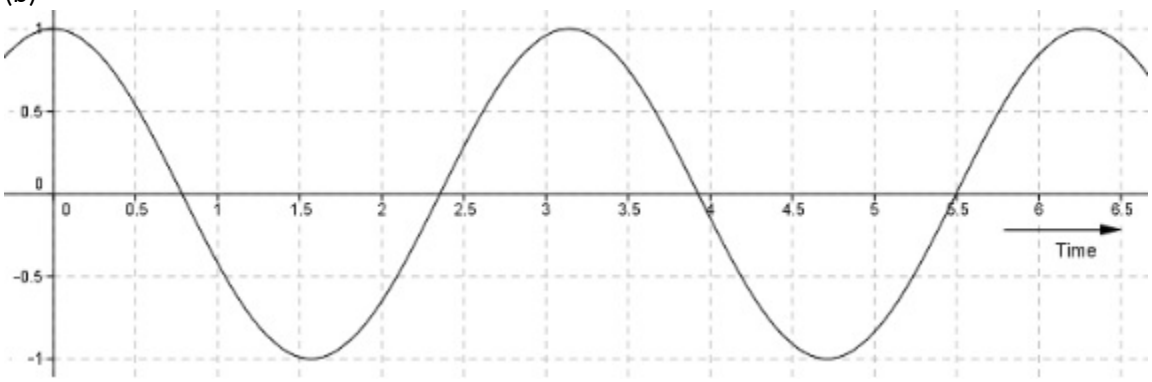
If choice a is selected set score to 1.

443. When an AC Generator is producing alternating current, what is the shape of the waveform?

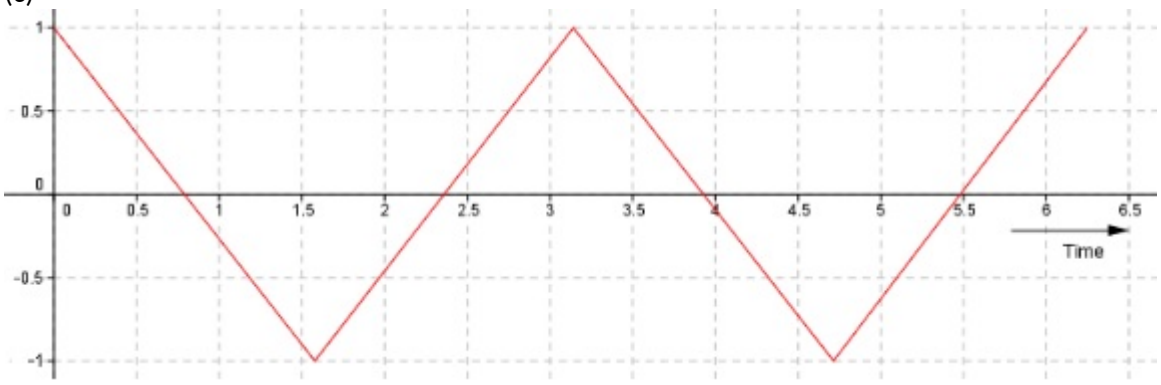
o (a)



- (b)



o (c)



If choice b is selected set score to 1.

444. The rotation speed of the armature of an AC generator increase.

What happens with the output frequency of this generator? The frequency...

o (a) will decrease.
o (b) will not change.

- (c) will increase.

If choice c is selected set score to 1.

445. The rotation speed of the armature of an AC generator decreases.

What happens with the output frequency of this generator? The frequency...

o (a) will not change.
o (b) will increase.

- (c) will decrease.

If choice c is selected set score to 1.

446. The number of pole pairs of an AC generator decreases.

What happens with the output frequency of this generator? The frequency...

o (a) will not change.
o (b) will increase.

- (c) will decrease.

If choice c is selected set score to 1.

447. The number of pole pairs of an AC generator increases.

What happens with the output frequency of this generator? The frequency...

o (a) will not change.
o (b) will decrease.

- (c) will increase.

If choice c is selected set score to 1.

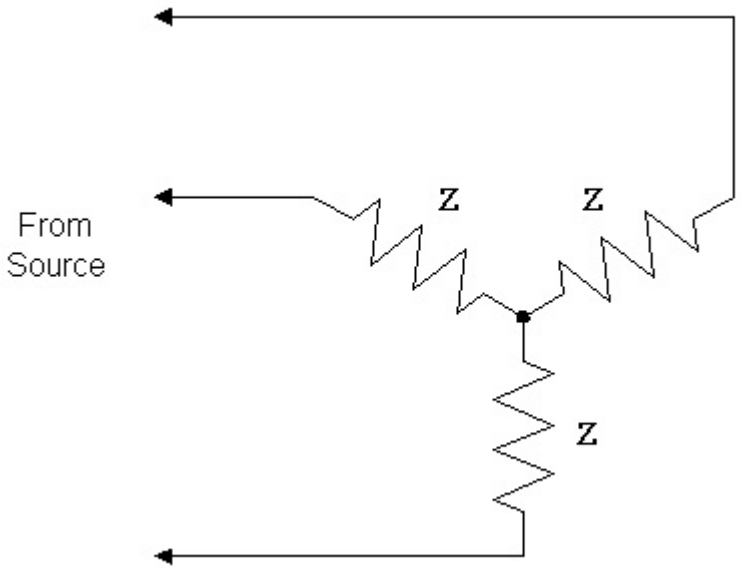
448. When a three phase AC Generator generate voltages, how many degrees are they apart?

- (a) 120 degrees.

o (b) 90 degrees.
o (c) 360 degrees.

If choice a is selected set score to 1.

449. What kind of three phase connection is indicated?

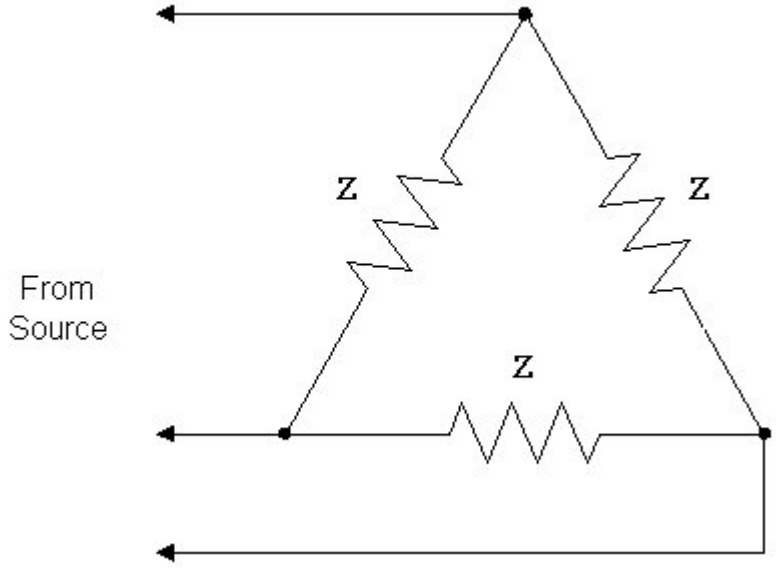


- (a) Wye Connection

o (b) Delta Connection
o (c) X-Ray Connection

If choice a is selected set score to 1.

450. What kind of three phase connection is indicated?



o (a) Wye Connection
o (b) Star Connection

- (c) Delta Connection

If choice c is selected set score to 1.

451. What determines the output voltage of a PMG?

The...

o (a) number of rotor windings.

- (b) rotor speed.

o (c) number of poles.

If choice b is selected set score to 1.

452. In an AC generator the stator windings are connected in a Y configuration and are equally loaded. What is true for the current in a neutral wire?

The current in a neutral wire...

o (a) equals to 3 times the phase current.
o (b) equals to 3 times the line current.

- (c) is zero.

If choice c is selected set score to 1.

453. Give an advantage of a three phase system.

o (a) A phase shift of 90^{o} is available.

- (b) In the Y connection 2 different voltages are available.

o (c) In the delta connection 2 different voltages are available.

If choice b is selected set score to 1.

454. On a split phase motor, a centrifugal switch disconnects the starting winding automatically, after the rotor has attained approximately....

- (a) 25 percent of its rated speed.

o (b) 90 percent of its rated speed.
o (c) 75 percent of its rated speed.

If choice a is selected set score to 1.

455. In a split phase motor....

o (a) the starting winding is 180 electrical degrees displaced from the main or running winding.

- o (b) the starting winding is placed on the main or running winding.

- (c) the starting winding is 90 electrical degrees displaced from the main or running winding.

If choice c is selected set score to 1.

456. The synchronous motor is....

- (a) a not-self-starting motor.

- o (b) an alternator.
- o (c) a self-starting motor.

If choice a is selected set score to 1.

457. The RPM of an AC motor can be controlled by change of....

- o (a) the supply current.

- (b) the supply frequency.

- o (c) the supply voltage.

If choice b is selected set score to 1.

458. What happens if an induction motor has no slip?

- o (a) Nothing, the motor is still running.
- o (b) High current flow in the rotor.

- (c) The rotor would slow down.

If choice c is selected set score to 1.

459. How can we change the direction of rotation of a three phase motor?

By reversing...

- o (a) the connections to the starting winding.
- o (b) the connection of one phase.

- (c) two of the leads to supply the motor.

If choice c is selected set score to 1.

460. How can we change the direction of rotation of a two phase motor?

By reversing...

- (a) the connection of one phase.

- o (b) the connections to the starting winding.
- o (c) two of the leads to supply the motor.

If choice a is selected set score to 1.

461. How can we change the direction of rotation of a one phase motor?

By reversing...

- o (a) the connection of one phase.
- • (b) the connections to the starting winding.
- o (c) two of the leads to supply the motor.

If choice b is selected set score to 1.

462. How can we control the rotation speed of an AC motor?

By changing the...

- o (a) phase current.
- o (b) phase voltage.
- • (c) supply frequency.

If choice c is selected set score to 1.

463. How can we control the rotation speed of an AC motor?

By changing the...

- o (a) phase current.
- • (b) number of pole pairs.
- o (c) phase voltage.

If choice b is selected set score to 1.

464. Which principle is commonly used to control the rotation speed of an AC motor?

By changing the...

- o (a) phase voltage.
- • (b) supply frequency.
- o (c) phase current.

If choice b is selected set score to 1.

If assessment score is 0% to 100% Feedback