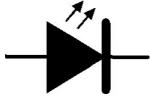


### Question block created by wizard

1. What kind of diode is shown?



- (a) This is a photo diode which is sensitive to light when it is conducting.
- (b) This is a tunnel diode that radiates heat when it is conducting.
- (c) This is a light emitting diode that radiates light when it is conducting.

*If choice c is selected set score to 1.*

2. What kind of diode is shown here?



- (a) This is a Schottky barrier diode.
- (b) This is a Varicap diode.
- (c) This is an zener diode.

*If choice b is selected set score to 1.*

3. What kind of diode symbol is shown here?



- (a) This is the symbol of a varicap diode.
- (b) This is the general diode symbol.
- (c) This is the symbol of a zener diode.

*If choice b is selected set score to 1.*

4. What kind of diode symbol is shown here?



- (a) This is the symbol of a varicap diode.
- (b) This is the symbol of a zener diode.
- (c) This is the symbol of a tunnel diode.

*If choice b is selected set score to 1.*

5. What kind of diode symbol is shown here?



- (a) This is the symbol of a zener diode.
- (b) This is the symbol of a varicap diode.
- (c) This is the symbol of a tunnel diode.

*If choice a is selected set score to 1.*

6. What type of diode is shown here?



- (a) This is the symbol of a zener diode.
- (b) This is the symbol of a shottky diode.
- (c) This is the symbol of a tunnel diode.

*If choice b is selected set score to 1.*

7. What kind of diode symbol is shown here?



- (a) This is the symbol of a zener diode.
- (b) This is the symbol of a tunneldiode.
- (c) This is the symbol of a shottky diode.

*If choice b is selected set score to 1.*

**8.** What kind of diode symbol is shown here?



- (a) This is the symbol of a LED.
- (b) This is the symbol of a photodiode.
- (c) This is the symbol of a shottky diode.

*If choice b is selected set score to 1.*

**9.** This is the symbol of a ...



- (a) Thyristor.
- (b) NPN transistor.
- (c) LED.

*If choice a is selected set score to 1.*

**10.** The device shown is a:



- (a) varactor diode.
- (b) light emitting diode.
- (c) signal diode.

*If choice a is selected set score to 1.*

**11.** The device shown is a:



- (a) Schottkey diode.

- (b) silicon controlled rectifier.
- o (c) rectifier diode.

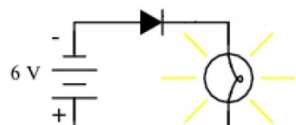
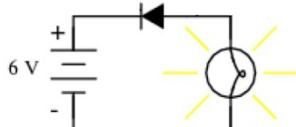
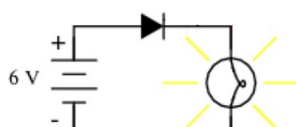
*If choice b is selected set score to 1.*

**12.** When is a diode conducting?

- o (a) When the cathode is positive with respect to the anode.
- o (b) When the anode is negative with respect to the cathode.
- (c) When the anode is positive with respect to the cathode.

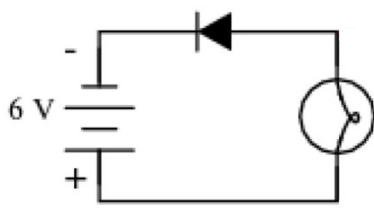
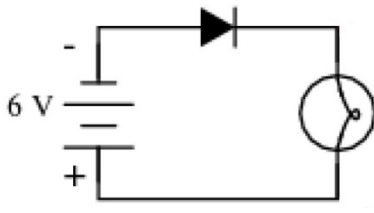
*If choice c is selected set score to 1.*

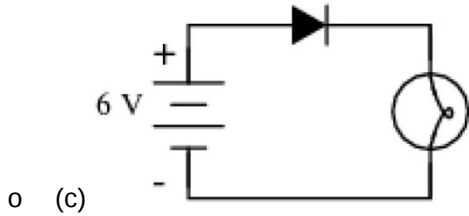
**13.** Which picture depicts the correct situation? (The light is illuminating.)

- o (a) 
- o (b) 
- (c) 

*If choice c is selected set score to 1.*

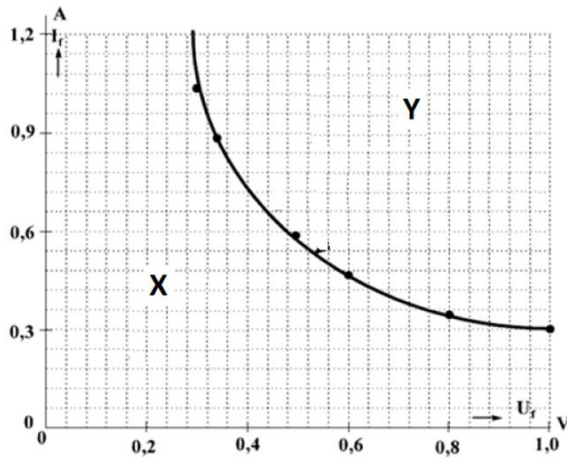
**14.** Which picture depicts the correct situation? (The light is not illuminating.)

- o (a) 
- (b) 



If choice b is selected set score to 1.

15. When is it prohibited to operate a diode?



- o (a) Exactly on the curve.
- o (b) In the area below the curve, area X.
- (c) In the area above the curve, area Y.

If choice c is selected set score to 1.

16. Which kind of charge carrier is present in the depletion zone?

- (a) Non.
- o (b) Holes.
- o (c) Electrons.

If choice a is selected set score to 1.

17. What is in excess present in N type semi-conductor material?

- o (a) Holes.
- o (b) Non.
- (c) Electrons.

If choice c is selected set score to 1.

**18.** What is in excess present in P type semi-conductor material?

- (a) Electrons.
- (b) Holes
- (c) Non.

*If choice b is selected set score to 1.*

**19.** Three Si-diodes are connected in series. What is the total forward voltage over the three diodes?

- (a) The voltage is 0,7 Volts.
- (b) The voltage is 2.1 Volts.
- (c) The voltage is 0,3 Volts.

*If choice b is selected set score to 1.*

**20.** How can a high voltage be distributed over more than one diode?

- (a) This can be done by connecting diodes in series. No additional components are needed.
- (b) This can be done by connecting diodes in series and connecting a resistor in series with each diode.
- (c) This can be done by connecting diodes in series and connecting a resistor parallel with each diode.

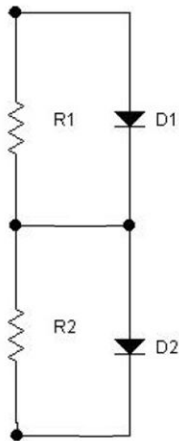
*If choice c is selected set score to 1.*

**21.** How can a regulated power supply of 4.9 Volt be constructed with standard Si-diodes?

- (a) This can be done by connecting diodes in parallel. A total of 7 diodes is necessary.
- (b) This can be done by connecting diodes in series. A total of 7 diodes is necessary.
- (c) It is not possible to obtain a regulated power supply this way.

*If choice b is selected set score to 1.*

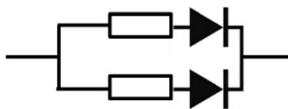
22. See figure. This circuit is used if...



- (a) a regulated power supply is required.
- (b) the breakdown voltage of one diode proves to be low for one diode.
- (c) the current of the circuit proves to be too high for one diode.

*If choice b is selected set score to 1.*

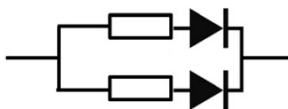
23. See figure. This circuit is used if...



- (a) the current of the circuit proves to be too high for one diode.
- (b) the breakdown voltage of one diode proves to be too low for one diode.
- (c) a regulated power supply is required

*If choice a is selected set score to 1.*

24. See figure. What is the purpose of the resistor in series with each diode?



- (a) To increase the breakdown voltage across each diode.
- (b) To assure that each diode has the same voltage applied.
- (c) To equal out the difference in the diodes.

*If choice c is selected set score to 1.*

**25.** How can a high current be distributed amongst more than one diode?

This can be done by....

- (a) connecting diodes parallel and connecting a resistor in series with each diode.
- o (b) connecting diodes in series.
- o (c) connecting diodes parallel and connecting a resistor parallel to each diode.

*If choice a is selected set score to 1.*

**26.** What defines the colour of a LED?

- (a) The material of the LED-chip.
- o (b) The colour of the plastic casing.
- o (c) The current flowing through the LED.

*If choice a is selected set score to 1.*

**27.** What is the name of the control connection of a thyristor?

- o (a) Cathode.
- o (b) Anode.
- (c) Gate.

*If choice c is selected set score to 1.*

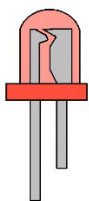
**28.** A thyristor is not triggered, what is true?

The thyristor will....

- o (a) conduct the positive halve of a sine wave.
- o (b) conduct the negative halve of a sine wave.
- (c) not conduct.

*If choice c is selected set score to 1.*

**29.** What are the correct connections for the depicted LED?



- (a) The short lead is the Cathode and the long lead is the Anode.

- (b) The short lead is the Anode and the long lead is the Cathode.
- (c) It depends on the position of the notch which lead is Anode or Cathode.

*If choice a is selected set score to 1.*

**30.** LEDs with different colours always...

- (a) have different forward biased voltages.
- (b) are made out of the same material.
- (c) have coloured plastic moulded shells.

*If choice a is selected set score to 1.*

**31.** What is a requirement to turn a thyristor on?

- (a) The gate current must be zero.
- (b) No conducting current must flow.
- (c) The voltage between Anode and Cathode must be high enough.

*If choice c is selected set score to 1.*

**32.** What is a requirement to turn a thyristor on?

- (a) A sufficient conducting current must flow.
- (b) The gate current must be zero.
- (c) The voltage between Anode and Cathode must be low.

*If choice a is selected set score to 1.*

**33.** What is a requirement to turn a thyristor on?

- (a) A gate current must flow.
- (b) The voltage between Anode and Cathode must be low.
- (c) No conducting current must flow.

*If choice a is selected set score to 1.*

**34.** In which mode is a photodiode operated?

- (a) Photovoltaic mode.
- (b) Photovoltaic or photoconductive mode.
- (c) Photoconductive mode.

*If choice b is selected set score to 1.*

**35.** A photodiode is operated in photovoltaic mode. This diode is?

- (a) Unbiased.
- o (b) Reversed biased
- o (c) Can be unbiased but also reversed biased

*If choice a is selected set score to 1.*

**36.** A photodiode is operated in photoconductive mode. This diode is?

- o (a) Can be unbiased but also reversed biased.
- (b) Reversed biased.
- o (c) Unbiased.

*If choice b is selected set score to 1.*

**37.** A photodiode in photoconductive mode is a diode....

- o (a) used in reversed or forward direction.
- (b) used in reversed direction.
- o (c) used in forward biased direction.

*If choice b is selected set score to 1.*

**38.** A photodiode in photovoltaic mode is a diode....

- (a) used in forward direction.
- o (b) used in reversed or forward direction.
- o (c) used in reversed direction.

*If choice a is selected set score to 1.*

**39.** What happens when the voltage across a varistor increases?

- o (a) The varistor will start conducting slowly at its defined voltage level.
- (b) The varistor will start conducting immediately at its defined voltage level.
- o (c) The varistor will stop conducting immediately at its defined voltage level.

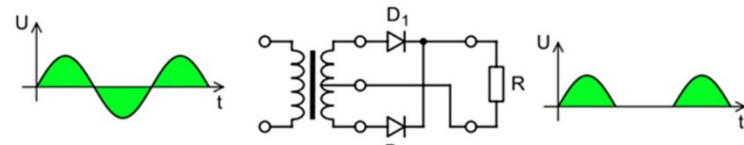
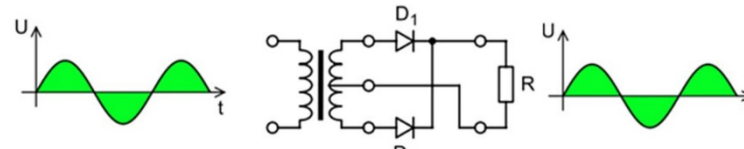
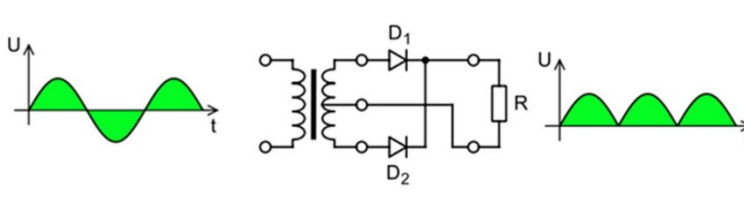
*If choice b is selected set score to 1.*

40. What is a typical characteristic of a Varistor?

- (a) When the voltage exceeds a certain level, its resistance will drop.
- o (b) With the increasing of voltage the variable resistor value will increase.
- o (c) The output voltage decreases when the input voltage increases.

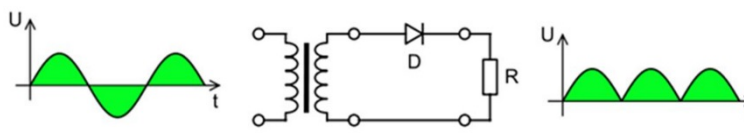
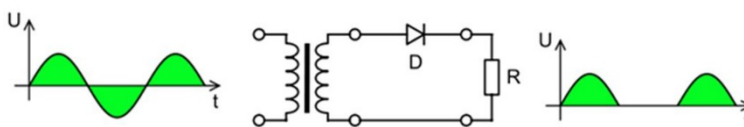
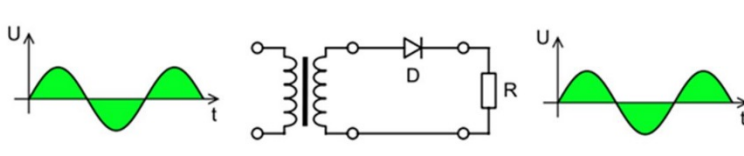
If choice a is selected set score to 1.

41. What is the correct picture for the voltage across the load resistor?

- o (a) 
- o (b) 
- (c) 

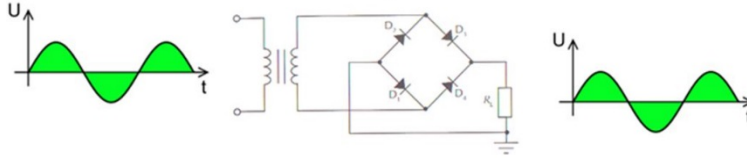
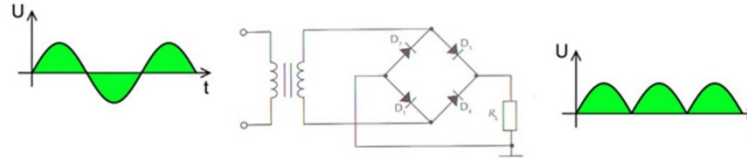
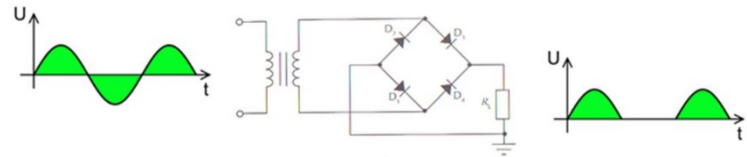
If choice c is selected set score to 1.

42. What is the correct picture for the voltage across the load resistor?

- o (a) 
- (b) 
- o (c) 

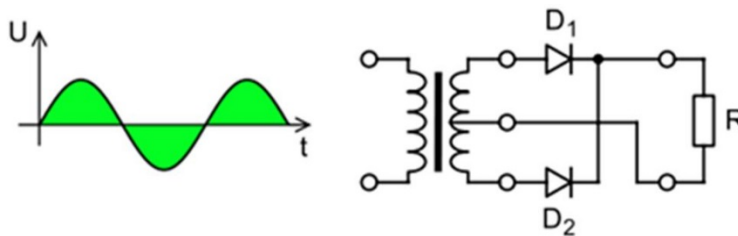
If choice b is selected set score to 1.

43. What is the correct picture for the voltage across the load resistor?

- o (a) 
- (b) 
- o (c) 

If choice b is selected set score to 1.

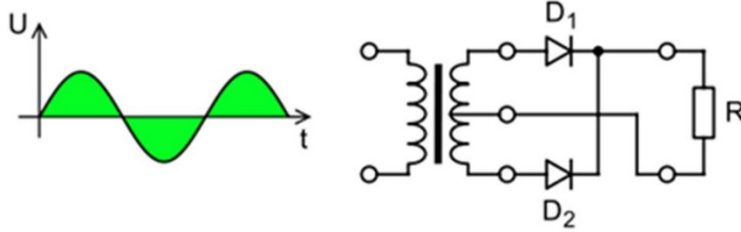
44. See pictures. Which diode or diodes conduct during the positive half of the sine wave?



- o (a) Diode D1 and D2.
- (b) Diode D1.
- o (c) Diode D2.

If choice b is selected set score to 1.

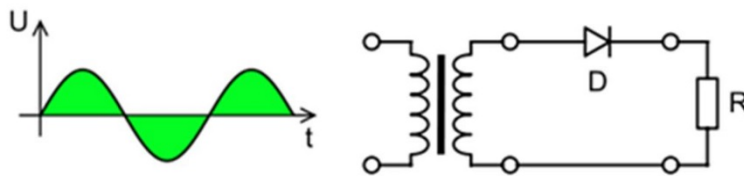
45. See pictures. Which diode or diodes conduct during the negative half of the sine wave?



- (a) Diode D1 and D2.
- (b) Diode D1.
- (c) Diode D2.

*If choice c is selected set score to 1.*

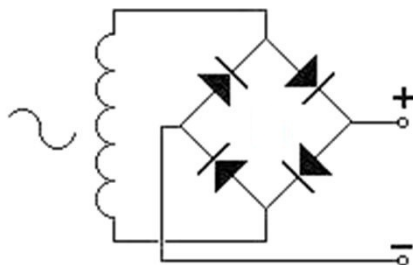
46. See pictures. At what moment of the sine wave is diode D conducting?



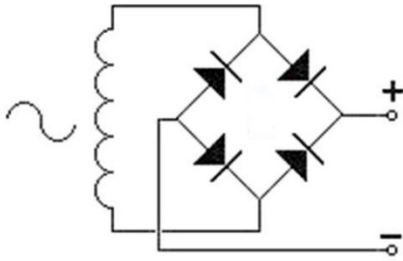
- (a) During the positive half of the sine wave.
- (b) During the positive half and the negative half of the sine wave.
- (c) During the negative half of the sine wave.

*If choice a is selected set score to 1.*

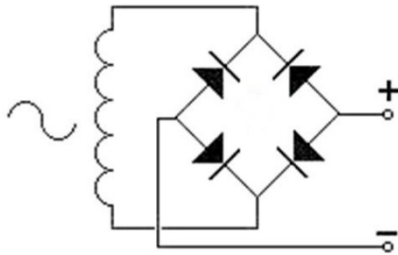
47. See pictures. Which picture depicts the correct Graetz rectifier?



- (a)



- (b)



- o (c)

*If choice b is selected set score to 1.*

**48.** What is the function of a full bridge (Graetz) rectifier?

- o (a) It generates a positive voltage for only the positive cycle on an AC voltage.
- (b) It generates a positive voltage for both positive and negative cycles on an AC voltage.
- o (c) It generates a positive voltage for only the negative cycle on an AC voltage.

*If choice b is selected set score to 1.*

**49.** When testing a diode with a digital multi-meter, what would be the indication?

- o (a) It gives an indication whether the diode under test is fit for a special purpose.
- (b) It gives a good / fault indication whether the device is operational or not.
- o (c) It gives an indication on the quality of the diode under test.

*If choice b is selected set score to 1.*

**50.** When testing a diode with a multi-meter, what must be observed?

- (a) The diode must be disconnected from the circuit before any test is performed.
- o (b) The circuit that contains the diode should not be connected to any power source.
- o (c) The circuit that contains the diode in must be properly biased to get reliable results.

*If choice a is selected set score to 1.*

**51.** A diode, measured both ways with an ohm meter, indicates zero both ways. What is your conclusion about this diode?

- (a) The diode is good.
- (b) The diode is open and defective.
- (c) The diode is shorted and defective.

*If choice c is selected set score to 1.*

**52.** A diode, measured both ways with an ohm meter, indicates infinite both ways. What is your conclusion about this diode?

- (a) The diode is shorted and defective.
- (b) The diode is open and defective.
- (c) The diode is good.

*If choice b is selected set score to 1.*

**53.** A diode, measured both ways with an ohm meter, indicates infinite one way and zero the other way. What is your conclusion about this diode?

- (a) The diode is shorted and defective.
- (b) The diode is good.
- (c) The diode is open and defective.

*If choice b is selected set score to 1.*

**54.** The region inside a diode where no free charge carriers exist is known as the:

- (a) conduction layer
- (b) insulation layer
- (c) depletion layer

*If choice c is selected set score to 1.*

**55.** Which one of the following answers gives the approximate forward voltage drop for a silicon diode?

- (a) 0.2 V
- (b) 0.6 V
- (c) 1.2 V

*If choice b is selected set score to 1.*

**56.** Which one of the following answers gives the approximate forward voltage drop for a germanium diode?

- (a) 0.2 V
- (b) 0.6 V
- (c) 1.2 V

*If choice a is selected set score to 1.*

**57.** Which of the following materials are semiconductors:

- (a) Germanium and zinc.
- (b) germanium and silicon.
- (c) aluminium and zinc.

*If choice b is selected set score to 1.*

**58.** The connections of a diode are labelled:

- (a) anode and cathode.
- (b) collector and emitter.
- (c) source and drain.

*If choice a is selected set score to 1.*

**59.** The stripe on a plastic encapsulated diode usually indicates the:

- (a) earth or ground connection.
- (b) cathode connection.
- (c) anode connection.

*If choice b is selected set score to 1.*

**60.** The direction of conventional current flow in a diode is from:

- (a) emitter to collector.
- (b) cathode to anode.
- (c) anode to cathode.

*If choice c is selected set score to 1.*

**61.** A silicon material doped with an element having a valence of 5 will produce....

- (a) a P type material
- (b) either an N type or a P type depending on what type of semiconductor material is used.
- (c) a N type material

*If choice c is selected set score to 1.*

**62.** An atom with 5 electrons in its outer shell is part of

- (a) a C type material
- (b) a P type material
- (c) a N type material

*If choice c is selected set score to 1.*

**63.** A silicon diode, when compared to a germanium diode has

- (a) a higher forward bias voltage
- (b) the same forward bias voltage
- (c) less forward bias voltage

*If choice a is selected set score to 1.*

**64.** When a diode is forward biased it exhibits:

- (a) zero resistance
- (b) a very high resistance
- (c) a very low resistance

*If choice c is selected set score to 1.*

**65.** When a diode is reverse biased it exhibits:

- (a) a very low resistance
- (b) a very high resistance
- (c) zero resistance

*If choice b is selected set score to 1.*

**66.** Reverse bias

- (a) lowers the potential barrier
- (b) greatly increases the majority carrier current

- (c) raises the potential barrier

*If choice c is selected set score to 1.*

**67.** If forward bias is increased from zero on a p-n junction, a rapid increase in current flow for a relatively small increase in voltage occurs

- o (a) when the depletion layer becomes larger than the space charge area
- (b) only after the forward bias exceeds the potential barrier
- o (c) when the flow of minority carriers is sufficient to cause an avalanche breakdown

*If choice b is selected set score to 1.*

**68.** When testing the forward bias of a diode with a multi-meter

- o (a) the positive lead of the ohm meter is placed on the cathode
- o (b) it does not matter which terminal the positive lead of the ohm meter is placed
- (c) the positive lead of the ohm meter is placed on the anode

*If choice c is selected set score to 1.*

**69.** To check the forward resistance of a diode with a multi-meter, the lead connected to the positive terminal is put to the

- (a) anode
- o (b) either anode or cathode
- o (c) cathode

*If choice a is selected set score to 1.*

**70.** A germanium diode has an upper temperature limit of about....

- (a) 80° - 100°C
- o (b) 150° - 200°C
- o (c) 250° - 300°C

*If choice a is selected set score to 1.*

**71.** A silicon diode has an upper temperature limit of about....

- o (a) 80° - 100°C
- (b) 150° - 200°C
- o (c) 250° - 300°C

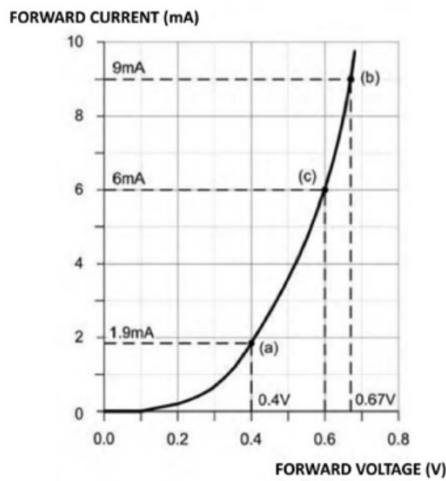
If choice b is selected set score to 1.

72. A typical general-purpose diode may be specified as having a reverse breakdown voltage of

- (a) 2 V
- (b) 20 V
- (c) 200 V

If choice c is selected set score to 1.

73. Determine the resistance of the diode when the forward voltage is 0.6 V. The characteristic of this diode is shown in the figure.



- (a) 0.1  $\Omega$
- (b) 10  $\Omega$
- (c) 100  $\Omega$

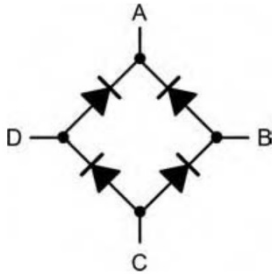
If choice c is selected set score to 1.

74. Forward voltage of a silicon diode is

- (a) 0.6 V
- (b) 0.2 V
- (c) 1.6 V

If choice a is selected set score to 1.

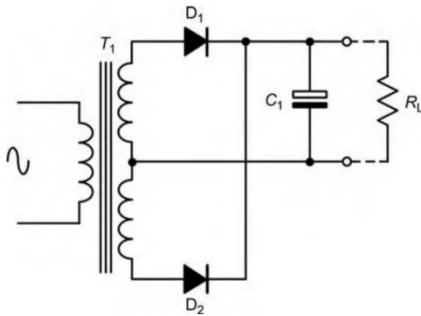
75. At which terminals the alternating current input should be connected to the bridge rectifier shown?



- (a) B and D
- o (b) A and B
- o (c) A and C

*If choice a is selected set score to 1.*

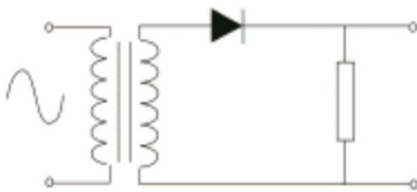
76. The function of  $C_1$  in the circuit shown in the figure is to:



- o (a) block direct current at the output
- (b) act as a reservoir
- o (c) form a load with  $R_L$

*If choice b is selected set score to 1.*

77. What type of circuit is shown in the following figure?

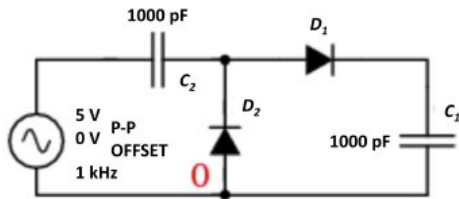


- (a) Half wave rectifier

- (b) Full wave rectifier
- (c) Flywheel diode

If choice a is selected set score to 1.

78. The figure shows a



- (a) voltage doubler
- (b) full wave rectifier
- (c) half wave rectifier

If choice a is selected set score to 1.

79. What gives the colour of an LED?

- (a) The type of gas used inside it.
- (b) The active element.
- (c) The plastic it is encased in.

If choice b is selected set score to 1.

80. A zener diode is used for

- (a) voltage stabilization.
- (b) rectification.
- (c) modulation.

If choice a is selected set score to 1.

81. This symbol is



- (a) a laser diode

- (b) an LED
- (c) a photodiode

*If choice c is selected set score to 1.*

**82.** The connections of a Zener diode are labelled:

- (a) source and drain.
- (b) collector and emitter.
- (c) anode and cathode.

*If choice c is selected set score to 1.*

**83.** When a reverse voltage of 4.7 V is applied to a Zener diode, a current of 25mA flows through it. When 4.8V is applied to the diode, the current flowing is likely to:

- (a) increase slightly.
- (b) fall slightly.
- (c) remain at 25 mA.

*If choice b is selected set score to 1.*

**84.** Which of the following answers gives the typical forward current for a light emitting diode?

- (a) 2 mA
- (b) 20 mA
- (c) 200 mA

*If choice b is selected set score to 1.*

**85.** The forward voltage drop for a light emitting diode is approximately:

- (a) 0.2 V
- (b) 0.6 V
- (c) 2 V

*If choice c is selected set score to 1.*

**86.** A diode which emits photons when conducting is a

- (a) varactor
- (b) light emitting

- (c) zener

*If choice b is selected set score to 1.*

**87.** The electrodes of an SCR are

- (a) gate, cathode, anode
- (b) source, drain, gate
- (c) anode, cathode, source

*If choice a is selected set score to 1.*

**88.** What diode is used to stop power spikes in a coil?

- (a) Varistor
- (b) Schottky diode
- (c) Gunn diode

*If choice a is selected set score to 1.*

**89.** When an SCR is switched on it has

- (a) low resistance
- (b) no change in resistance
- (c) high resistance

*If choice a is selected set score to 1.*

**90.** A zener diode is designed to operate

- (a) above its breakdown voltage
- (b) either above or below its breakdown voltage
- (c) below its breakdown voltage

*If choice a is selected set score to 1.*

**91.** A photodiode is operated under....

- (a) reverse or forward bias conditions
- (b) forward bias conditions
- (c) reverse bias conditions

*If choice c is selected set score to 1.*

**92.** To increase capacitance of a varactor diode

- (a) reverse bias voltage is decreased
- o (b) forward bias voltage is decreased
- o (c) reverse bias voltage is increased

*If choice a is selected set score to 1.*

**93.** A Zener diode is used across the output for a power supply circuit to

- o (a) give a full wave rectification
- o (b) prevent thermal runaway
- (c) provide a steady DC voltage output without falling

*If choice c is selected set score to 1.*

**94.** What is a Schottky diode used for?

- o (a) Rectification
- o (b) Stabilisation
- (c) Very high frequency applications

*If choice c is selected set score to 1.*

**95.** A typical application for a rectifier diode is:

- o (a) detecting signals in a radio receiver .
- o (b) switching current in an alternating current power controller.
- (c) converting alternating current to direct current in a power supply.

*If choice c is selected set score to 1.*

**96.** A typical application for a silicon controlled diode is:

- o (a) switching current in an alternating current power controller.
- (b) converting alternating current to direct current in a power supply.
- o (c) detecting signals in a radio receiver .

*If choice b is selected set score to 1.*

**97.** A typical application for a varactor diode is:

- o (a) detecting signals in a radio receiver .
- o (b) converting alternating current to direct current in a power supply.

- (c) varying the frequency of a tuned circuit.

*If choice c is selected set score to 1.*

**98.** A typical application for a Zener diode is:

- (a) regulating a voltage supply.
- o (b) controlling the current in a load.
- o (c) acting as a variable capacitance in a tuned circuit.

*If choice a is selected set score to 1.*

**99.** Which symbol is indicated?



- o (a) Capacitor
- o (b) Energy Source
- (c) Transistor

*If choice c is selected set score to 1.*

**100.** See picture. This is the symbol of a .....



- (a) NPN transistor.
- o (b) N-channel FET.
- o (c) PNP transistor.

*If choice a is selected set score to 1.*

101. See picture. This is the symbol of a .....



- (a) NPN transistor.
- (b) PNP transistor.
- (c) N-channel FET.

*If choice b is selected set score to 1.*

102. See picture. This is the picture of a ....



- (a) P-channel FET.
- (b) P-channel depletion MOSFET.
- (c) N-channel FET.

*If choice c is selected set score to 1.*

103. See picture. This is the symbol of a ....



- (a) P-channel depletion MOSFET.
- (b) P-channel FET.
- (c) N-channel FET.

*If choice b is selected set score to 1.*

**104.** The device shown in the figure is:



- (a) a junction gate field effect transistor.
- (b) a PNP bipolar junction transistor.
- (c) an NPN bipolar junction transistor.

*If choice c is selected set score to 1.*

**105.** The device shown in the figure is:



- (a) a junction gate field effect transistor.
- (b) an NPN bipolar junction transistor.
- (c) a PNP bipolar junction transistor.

*If choice c is selected set score to 1.*

**106.** The device shown in the figure is:



- (a) a PNP bipolar junction transistor.
- (b) a junction gate field effect transistor.
- (c) an NPN bipolar junction transistor.

*If choice b is selected set score to 1.*

107. The device shown in the figure is:



- (a) a junction gate field effect transistor.
- (b) an insulated gate field effect transistor.
- (c) a N Channel Depletion Mode Mosfet.

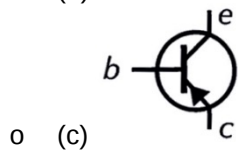
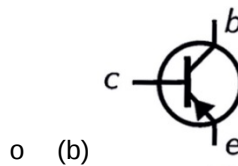
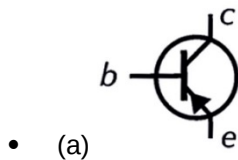
*If choice c is selected set score to 1.*

108. What is the basic functionality of a transistor?

- (a) Converting AC to DC
- (b) Converting DC to AC
- (c) Switching or Amplification

*If choice c is selected set score to 1.*

109. Which picture depicts the correct symbol?



*If choice a is selected set score to 1.*

**110.** See figure. What are the names of the leads of this transistor.



- (a) Base, Emitter, Collector.
- (b) Drain, Source, Gate.
- (c) Anode, Cathode, Gate.

*If choice b is selected set score to 1.*

**111.** See picture. What are the names of the leads of this transistor?



- (a) Base, Emitter, Collector.
- (b) Anode, Cathode, Gate.
- (c) Drain, Source, Gate.

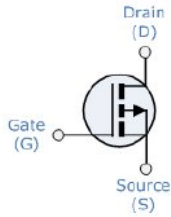
*If choice a is selected set score to 1.*

**112.** What are the three basic elements of a two-junction transistor?

- (a) Normal, Plus and Negative
- (b) Emitter, Base and Collector
- (c) Normal, Positive and Negative

*If choice b is selected set score to 1.*

**113.** Which type of transistor is indicated in the picture?



- (a) N-type MOSFET
- (b) P-type MOSFET
- (c) Common Base Transistor Circuit

*If choice b is selected set score to 1.*

**114.** How large is the phase angle between in- and output signal of a common emitter amplifier?

- (a) Between  $0^\circ$  and  $180^\circ$ .
- (b)  $180^\circ$ .
- (c)  $0^\circ$ .

*If choice b is selected set score to 1.*

**115.** For which kind of application is the common collector amplifier very useful?

- (a) Amplification of the input voltage.
- (b) Inverting the input signal.
- (c) Impedance matching.

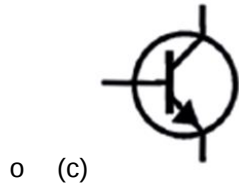
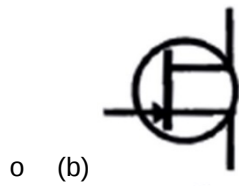
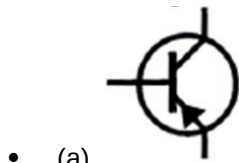
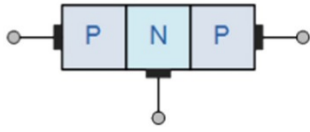
*If choice c is selected set score to 1.*

**116.** For which kind of application is the common base amplifier very useful?

- (a) RF amplification.
- (b) Inverting the input signal.
- (c) Impedance matching.

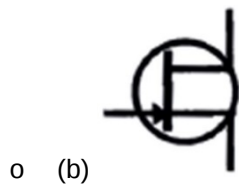
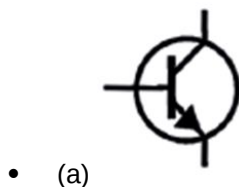
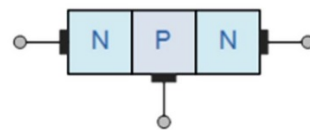
*If choice a is selected set score to 1.*

117. See picture. Which transistor symbol matches with this physical construction?



*If choice a is selected set score to 1.*

118. See picture. Which transistor symbol matches with this physical construction?





(c)

*If choice a is selected set score to 1.*

**119.** See picture. Which transistor symbol matches with this two diode analogy?



(a)



(b)



(c)



*If choice a is selected set score to 1.*

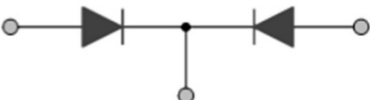
**120.** Which picture is the two diode analogy for a NPN transistor?



(a)



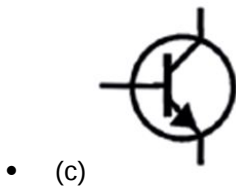
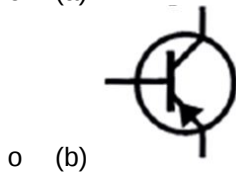
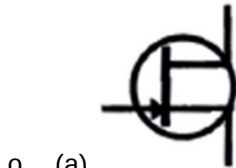
(b)



(c)

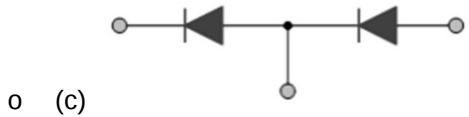
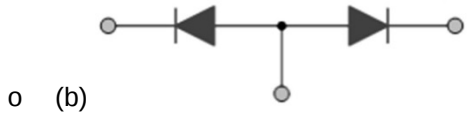
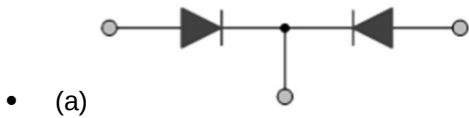
If choice b is selected set score to 1.

121. See picture. Which transistor symbol matches with this two diode analogy?



If choice c is selected set score to 1.

122. Which is the two diode analogy for a PNP transistor?



If choice a is selected set score to 1.

123. What indicates the amplification factor of a transistor?

The ratio between....

- (a) base and collector current.

- (b) collector and base current.
- o (c) collector and emitter current.

*If choice b is selected set score to 1.*

**124.** What is an advantage of a FET compared to bipolar transistor?

- (a) The input impedance of a FET is higher.
- o (b) The gain of a FET is higher.
- o (c) The input impedance of a FET is lower.

*If choice a is selected set score to 1.*

**125.** What is true for the gate of a MOS-FET?

- o (a) A MOS-FET has no gate.
- o (b) The gate of a MOS-FET is in direct contact with the silicon.
- (c) There is no direct contact between the gate and silicon of a MOS-FET.

*If choice c is selected set score to 1.*

**126.** A MOS-FET is a .....

- (a) voltage controlled device.
- o (b) current controlled device.
- o (c) can be either a voltage or current controlled device.

*If choice a is selected set score to 1.*

**127.** In an NPN transistor the P type material is the?

- o (a) emitter
- (b) base
- o (c) collector

*If choice b is selected set score to 1.*

**128.** Which way does conventional current flow in a PNP junction?

- o (a) Collector to base.
- o (b) Collector to emitter.
- (c) Emitter to base.

*If choice c is selected set score to 1.*

**129.** For conduction of a transistor the emitter junction is

- (a) reverse biased.
- (b) forward or reverse as appropriate to the input signal.
- (c) forward biased.

*If choice c is selected set score to 1.*

**130.** In a PNP transistor which way does conventional current flow

- (a) emitter to collector.
- (b) collector to emitter.
- (c) base to emitter.

*If choice a is selected set score to 1.*

**131.** The connections to a JFET are labelled:

- (a) anode, cathode and gate.
- (b) source, gate and drain.
- (c) collector, base and emitter.

*If choice b is selected set score to 1.*

**132.** In normal operation of a bipolar junction transistor the:

- (a) both junctions are forward biased.
- (b) base–emitter junction is forward biased and the collector–base junction is reverse biased.
- (c) base–emitter junction is reverse biased and the collector–base junction is forward biased.

*If choice b is selected set score to 1.*

**133.** What is the hFE for a transistor when  $I_B = 1\text{mA}$  and  $I_C = 50\text{ mA}$ ?

- (a) 0.02
- (b) 49
- (c) 50

*If choice c is selected set score to 1.*

**134.** Which bias voltages are applied on a bipolar junction transistor in normal operation?

- (a) Fwd bias on base-emitter and reverse bias on collector-base.
- o (b) Reverse bias on base-emitter and forward bias on collector-base.
- o (c) Forward bias on both junctions.

*If choice a is selected set score to 1.*

**135.** The hFE of a transistor is found from the ratio of:

- o (a) emitter current to base current.
- o (b) collector current to emitter current.
- (c) collector current to base current.

*If choice c is selected set score to 1.*

**136.** In an NPN transistor the P is the

- (a) base
- o (b) emitter
- o (c) collector

*If choice a is selected set score to 1.*

**137.** What term is used for a semiconductor that has three or more elements?

- (a) Transistor.
- o (b) Diode.
- o (c) Point contact.

*If choice a is selected set score to 1.*

**138.** What are the three elements of a transistor?

- (a) Emitter, collector and base.
- o (b) Anode, base and collector.
- o (c) Cathode, base and collector.

*If choice a is selected set score to 1.*

**139.** What is the total number of PN junctions in a transistor?

- o (a) One
- (b) Two

- (c) Three

*If choice b is selected set score to 1.*

**140.** What are the two junctions of a transistor?

- (a) Emitter-base and emitter-collector
- (b) emitter-base and collector-emitter
- (c) emitter-base and base-collector

*If choice c is selected set score to 1.*

**141.** In a PNP transistor the N is the?

- (a) collector.
- (b) base.
- (c) emitter.

*If choice b is selected set score to 1.*

**142.** Which way does conventional current flow in a PNP junction?

- (a) Collector to emitter.
- (b) Collector to base.
- (c) Emitter to base.

*If choice c is selected set score to 1.*

**143.** For conduction of a transistor the emitter junction is

- (a) fwd biased .
- (b) fwd or reverse as appropriate to the input signal.
- (c) reverse biased.

*If choice a is selected set score to 1.*

**144.** In a PNP transistor which way does conventional current flow?

- (a) emitter to collector.
- (b) collector to emitter.
- (c) base to emitter.

*If choice a is selected set score to 1.*

**145.** In a PNP transistor, conventional current will flow when

- (a) the base is more positive than the emitter.
- (b) the emitter is more positive than the base.
- (c) the collector is more positive than the emitter.

*If choice b is selected set score to 1.*

**146.** The connections to a JFET are labelled:

- (a) source, gate and drain.
- (b) collector, base and emitter.
- (c) anode, cathode and gate.

*If choice a is selected set score to 1.*

**147.** The input resistance of a transistor in common-emitter mode is found from the ratio of:

- (a) base–emitter voltage to base current.
- (b) collector–base voltage to base current.
- (c) collector–emitter voltage to emitter current.

*If choice a is selected set score to 1.*

**148.** In a transistor, what percent of the total current flows through the emitter lead?

- (a) 5 %
- (b) 98 %
- (c) 100 %

*If choice b is selected set score to 1.*

**149.** Which biased voltage must be applied to the emitter to test the transistor conduction?

- (a) forward biase.
- (b) reverse biase.
- (c) forward or reverse biase as appropriate to the input signal.

*If choice a is selected set score to 1.*

**150.** A FET when compared to a junction transistor is

- (a) high impedance.

- (b) low impedance.
- (c) current operated.

*If choice a is selected set score to 1.*

**151.** In a FET, the junction connections are called

- (a) drain, source and gate
- (b) drain, collector and junctions
- (c) base, collector and emitter

*If choice a is selected set score to 1.*

**152.** A JFET is

- (a) voltage sensitive.
- (b) current sensitive.
- (c) either of the above depending on resistance in the circuit.

*If choice a is selected set score to 1.*

**153.** What does the FET use to control the electrostatic field within the transistor?

- (a) low input impedance.
- (b) current
- (c) voltage

*If choice c is selected set score to 1.*

**154.** If a P-type material is used to construct the gate of a JFET, what material should be used to construct the remaining part of the JFET?

- (a) P-type
- (b) N-type
- (c) junction type

*If choice b is selected set score to 1.*

**155.** The common collector amplifier is sometimes called the emitter follower circuit because

- (a) the emitter current follows the collector current.
- (b) the emitter voltage follows the collector voltage.
- (c) the emitter voltage follows the base voltage.

*If choice c is selected set score to 1.*

**156.** An amplifier can provide both voltage gain and current gain when it is connected in the

- (a) common collector configuration.
- (b) common base configuration.
- (c) common emitter configuration .

*If choice c is selected set score to 1.*

**157.** The input and output signals of a common emitter amplifier are

- (a) equal
- (b) out of phase
- (c) in phase

*If choice b is selected set score to 1.*

**158.** An amplifier current gain will be slightly less than 1, but its voltage gain will be high, if it is connected in the

- (a) common base configuration
- (b) common collector configuration
- (c) common emitter configuration

*If choice a is selected set score to 1.*

**159.** What amplifier is biased at cut off ?

- (a) A
- (b) B
- (c) C

*If choice b is selected set score to 1.*

**160.** Which class of amplifier allows collector current to flow for a full 360 degrees of the input signal?

- (a) A
- (b) B
- (c) C

*If choice a is selected set score to 1.*

**161.** Which class of amplifier has the lowest efficiency?

- (a) A
- o (b) B
- o (c) C

*If choice a is selected set score to 1.*

**162.** Which type of flip flop has only 1 data input?

- o (a) RS
- (b) D
- o (c) JK

*If choice b is selected set score to 1.*

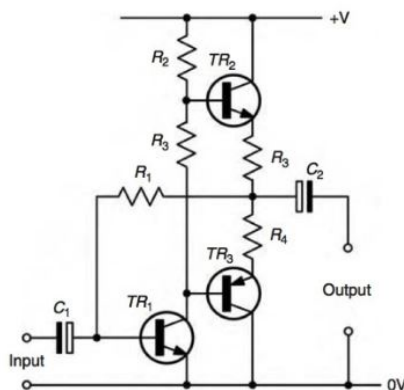
**163.** Two push-pull transistors have what in common?

- (a) emitters
- o (b) collectors
- o (c) bases

*If choice a is selected set score to 1.*

**164.** In the figure you see a push-pull amplifier. The transistor TR2 and TR3 are from different types. One is a PNP transistor and the other a NPN transistor.

Why are used two different transistors?



- o (a) Both transistors work together at the same time to produce more power at the output.

- (b) One transistor amplifies the positive half and the other transistor amplifies the negative half of the input signal.
- o (c) It is not necessary to use two different transistors. It is also possible to use the same type of transistor.

*If choice b is selected set score to 1.*

**165.** What is a basic characteristic of an ideal operational amplifier?

- (a) The input impedance is infinite.
- o (b) The input impedance is finite.
- o (c) The input impedance is zero.

*If choice a is selected set score to 1.*

**166.** What is a basic characteristic of an ideal operational amplifier?

- o (a) The output impedance is finite.
- o (b) The output impedance is infinite.
- (c) The output impedance is zero.

*If choice c is selected set score to 1.*

**167.** What is the basic characteristic of an ideal operational amplifier?

- o (a) The amplification is finite.
- o (b) The amplification is zero.
- (c) The amplification is infinite.

*If choice c is selected set score to 1.*

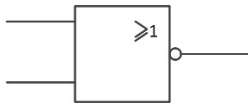
**168.** From what type of gate is the truth-table shown here?

A	B	Output
0	0	0
0	1	1
1	0	1
1	1	1

- o (a) This is a NOR-gate.
- (b) This is an OR gate.
- o (c) This is an AND-gate.

*If choice b is selected set score to 1.*

169. What type of gate is shown here?



- (a) This is a NOR-gate.
- o (b) This is an NAND-gate.
- o (c) This is an OR-gate

*If choice a is selected set score to 1.*

170. What gate is represented by the truth table shown here?

A	B	Output
0	0	0
0	1	0
1	0	0
1	1	1

- o (a) This is an OR gate.
- o (b) This is an EXOR gate.
- (c) This is an AND gate.

*If choice c is selected set score to 1.*

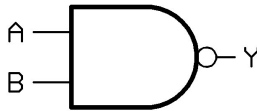
171. What kind of gate is shown here?



- (a) This is an EXNOR gate.
- o (b) This is a NAND gate.
- o (c) This is a NOR gate.

*If choice a is selected set score to 1.*

**172.** What kind of gate is shown here?



- (a) This is an EXNOR gate.
- (b) This is a NAND gate.
- (c) This is a NOR gate.

*If choice b is selected set score to 1.*

**173.** What is a disadvantage of an electronic switch compared to a mechanical switch?

- (a) The reliability is lower.
- (b) The switch resistance when closed is never zero.
- (c) The life span is shorter.

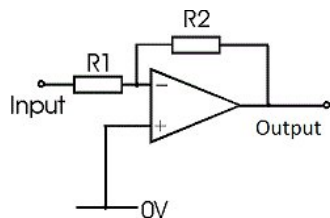
*If choice b is selected set score to 1.*

**174.** What is a disadvantage of an electronic switch compared to a mechanical switch?

- (a) The reliability is lower.
- (b) The switch resistance when open is zero.
- (c) During switching the electronic switch will generate heat.

*If choice c is selected set score to 1.*

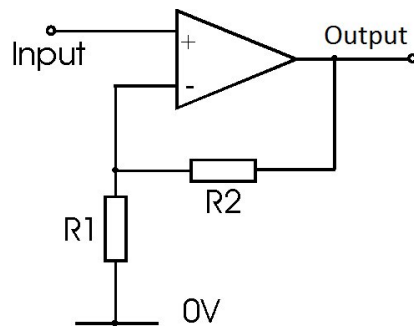
**175.** What kind of amplifier is shown in the schematic?



- (a) This is a voltage follower.
- (b) This is an inverting amplifier.
- (c) This is an non-inverting amplifier.

*If choice b is selected set score to 1.*

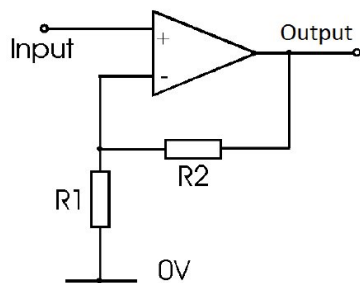
176. What kind of amplifier is shown in the schematic?



- (a) This is a voltage follower.
- (b) This is an inverting amplifier.
- (c) This is an non-inverting amplifier.

*If choice c is selected set score to 1.*

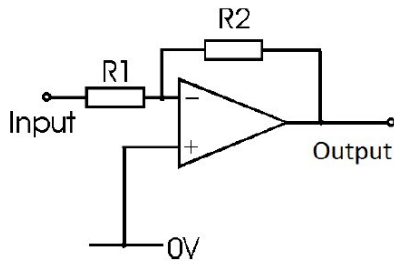
177. What will happen with a signal supplied to the input of this amplifier?



- (a) The signal will either appear inverted or not inverted at the output.
- (b) The signal will appear not inverted at the output.
- (c) The signal will appear inverted at the output.

*If choice b is selected set score to 1.*

**178.** What will happen with a signal supplied to the input of this amplifier?



- (a) The signal will appear inverted at the output.
- o (b) The signal will appear not inverted at the output.
- o (c) The signal will appear attenuated at the output.

*If choice a is selected set score to 1.*

**179.** The function of a NOT logic gate within a circuit is to....

- o (a) ensure the input signal is DC only.
- o (b) ensure the output signal is of the same state as the input signal.
- (c) invert the input signal so that the output is always of the opposite state.

*If choice c is selected set score to 1.*

**180.** Because of the input/output relationship of an AND gate, it is often referred to as the....

- o (a) "any or all" gate.
- o (b) "inhibited" or "negated" gate.
- (c) "all or nothing" gate.

*If choice c is selected set score to 1.*

**181.** Because of the input/output relationship of an OR gate, it is often referred to as the....

- o (a) "inhibited" or "negated" gate.
- (b) "any or all" gate.
- o (c) "all or nothing" gate.

*If choice b is selected set score to 1.*

**182.** What is the proper name for an "all or nothing" gate?

- o (a) NOT
- o (b) OR

- (c) AND

*If choice c is selected set score to 1.*

**183.** A logic gates function is to....

- o (a) close a set of switches in a logical sequence.
- (b) send an appropriate output depending on the input.
- o (c) math the input to the output.

*If choice b is selected set score to 1.*

**184.** If a logic gate is referred to as an "ALL or NOTHING" gate, it is an....

- o (a) EXOR gate
- (b) AND gate.
- o (c) OR gate.

*If choice b is selected set score to 1.*

**185.** What gate does the following algebraic expression represent:  $F = A \cdot B \cdot C$  ?

- (a) AND
- o (b) NOT
- o (c) OR

*If choice a is selected set score to 1.*

**186.** What gate does the following algebraic expression represent:  $F = A+B+C$  ?

- o (a) NOT
- o (b) NOR
- (c) OR

*If choice c is selected set score to 1.*

**187.** What does the following truth table represent? See the figure

A	B	C
0	0	0
0	1	1
1	0	1
1	1	0

- (a) Exclusive AND
- (b) Exclusive OR
- (c) Exclusive NOR

*If choice b is selected set score to 1.*

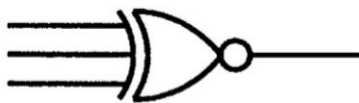
**188.** The following symbol represents a ..... Logic gate. See the figure



- (a) EXOR
- (b) NAND
- (c) NOT

*If choice a is selected set score to 1.*

**189.** The following symbol represents a ..... Logic gate. See the figure



- (a) NAND
- (b) EXNOR
- (c) EXOR

*If choice b is selected set score to 1.*

**190.** What are the ideal characteristics of an Op Amp?

- (a) Infinite gain, infinite input impedance and infinite output impedance.
- (b) Low gain, infinite input impedance and zero output impedance.
- (c) Infinite gain, infinite input impedance and zero output impedance.

*If choice c is selected set score to 1.*

**191.** The negative feedback for an integrator is connected via a

- (a) inductor.
- (b) resistor.
- (c) capacitor.

*If choice c is selected set score to 1.*

**192.** What does the output voltage of an op-amp depend upon?

- (a) The resistors in the circuit.
- (b) The op amp bandwidth.
- (c) The gain of the op-amp.

*If choice a is selected set score to 1.*

**193.** A device which has a high input impedance, low output impedance and high voltage gain is a

- (a) Class A amp.
- (b) Class B amp.
- (c) Op-Amp.

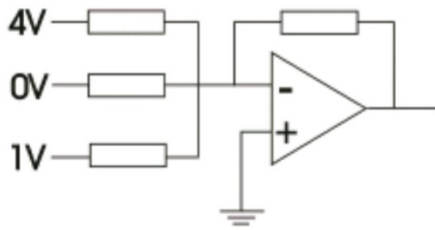
*If choice c is selected set score to 1.*

**194.** Op amps use what power supply?

- (a) 26 VDC
- (b) 6 - 15 VDC
- (c) 26 VAC

*If choice b is selected set score to 1.*

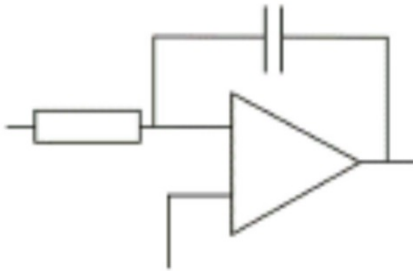
195. What is the output of the amplifier shown in the figure?



- (a) 3 V
- (b) 0 V
- (c) 5 V

*If choice c is selected set score to 1.*

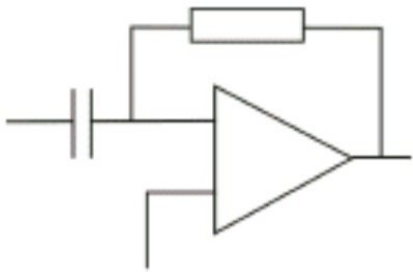
196. This is a diagram of....



- (a) an adder
- (b) an integrator
- (c) a differentiator

*If choice b is selected set score to 1.*

197. This is a diagram of....



- (a) a differentiator

- (b) an integrator
- (c) an adder

*If choice a is selected set score to 1.*

**198.** A non-inverting op-amp has....

- (a) a non-inverting input and an inverting output.
- (b) a non-inverting input connection only.
- (c) an inverting input and a non-inverting output.

*If choice b is selected set score to 1.*

**199.** The input resistance to an inverting op-amp is  $100\ \Omega$ . The feedback resistance is  $100\ \text{k}\Omega$ . What is the amplifier gain?

- (a)  $1/1000$
- (b)  $1000$
- (c)  $-1000$

*If choice c is selected set score to 1.*

**200.** Resistors and capacitors are used to couple stages of amplifiers so that

- (a) equal amounts of AC and DC can be applied.
- (b) only DC can be applied.
- (c) only AC can be applied.

*If choice c is selected set score to 1.*

**201.** In order to stabilize the gain of an amplifier and to increase the frequency response, we're using....

- (a) negative feedback.
- (b) positive feedback.
- (c) transformer coupling.

*If choice a is selected set score to 1.*

**202.** When does an amplifier become unstable and start to oscillate (i.e. It generates an output without an input being present)?

- (a) By coupling it to a transformer.
- (b) By applying negative feedback.

- (c) By applying positive feedback.

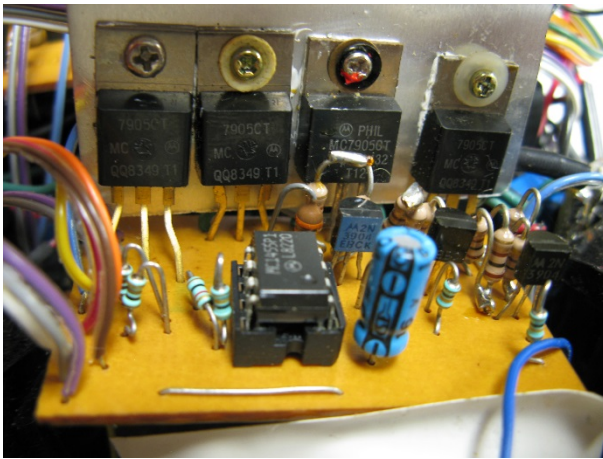
*If choice c is selected set score to 1.*

**203.** When negative feedback is applied to an amplifier,....

- (a) the overall gain is reduced and the bandwidth is increased.
- o (b) this will result in instability and oscillation.
- o (c) the overall gain is increased and the bandwidth is reduced.

*If choice a is selected set score to 1.*

**204.** What type of PCB is shown here?



- o (a) This is an SMD PCB.
- (b) This is a through-hole PCB.
- o (c) This is a flexible PCB.

*If choice b is selected set score to 1.*

**205.** What material is used for High-Frequency circuits?

- (a) PTFE (Poly-Tetra-Fluor-Ethylene).
- o (b) Glass-fiber-epoxy laminate.
- o (c) Kapton.

*If choice a is selected set score to 1.*

**206.** What does the abbreviation SMD mean?

- o (a) Simple Manipulated Device.

- (b) Simple Mixed Devices.
- (c) Surface Mounted Device.

*If choice c is selected set score to 1.*

**207.** Flexible PCB are made out of ....

- (a) PTFE (Poly-Tetra-Fluor-Ethylene).
- (b) Kapton.
- (c) Pertinax.

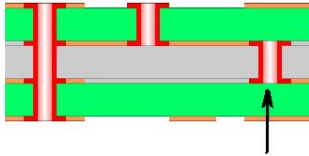
*If choice b is selected set score to 1.*

**208.** Which kind of PCB material is most widely used?

- (a) Pertinax.
- (b) Phenol.
- (c) Glass fibre epoxy laminate.

*If choice c is selected set score to 1.*

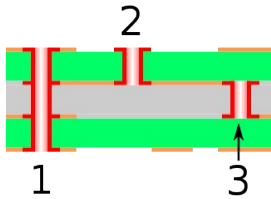
**209.** How is the connection indicated with the arrow named?



- (a) A blind via.
- (b) A via.
- (c) A buried via.

*If choice c is selected set score to 1.*

**210.** How is the connection number 2 named?



- (a) A via.
- (b) A buried via.
- (c) A blind via.

*If choice c is selected set score to 1.*

**211.** What is the purpose of a buried via?

- (a) Connecting layers inside the PCB.
- (b) Connecting the top layer or bottom layer to one of the inside layers.
- (c) Connecting the top layer to the bottom layer, eventually connecting to inside layers.

*If choice a is selected set score to 1.*

**212.** What is the purpose of a blind via?

- (a) Connecting the top layer or bottom layer to one of the inside layers.
- (b) Connecting the top layer to the bottom layer, eventually connecting to inside layers.
- (c) Connecting layers inside the PCB.

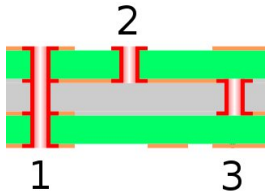
*If choice a is selected set score to 1.*

**213.** What is the purpose of a standard via?

- (a) Connecting the top layer or bottom layer to one of the inside layers.
- (b) Connecting the top layer to the bottom layer, eventually connecting to inside layers.
- (c) Connecting layers inside the PCB.

*If choice b is selected set score to 1.*

**214.** How is the connection number 1 named?



- (a) Via.
- o (b) Buried via.
- o (c) Blind via.

*If choice a is selected set score to 1.*

**215.** What is the purpose of a PCB via?

- (a) To make connections between different PCB layers.
- o (b) Exposed material on a PCB for soldering.
- o (c) This are areas on the PCB for fixing the PCB's in a position during manufacturing.

*If choice a is selected set score to 1.*

**216.** What is the maximum operating temperature for PCB FR-4 laminate?

- o (a) 225 °C
- o (b) 75 °C
- (c) 125 °C

*If choice c is selected set score to 1.*

**217.** Which laminate material is used for High Frequency PCB's?

- (a) PTFE
- o (b) FR-4
- o (c) G-10

*If choice a is selected set score to 1.*

**218.** What is the function of a pogo pin?

- (a) A spring loaded contact for test purposes.
- o (b) A contact to solder component leads.
- o (c) A special soldering tool for PCB's.

*If choice a is selected set score to 1.*

**219.** What is meant with "solder jumper"?

- (a) A tool to increase contact before soldering.
- (b) An unwanted blob of solder with danger for a short circuit.
- (c) A copper path on a PCB.

*If choice b is selected set score to 1.*

**220.** The letters, numbers, symbol and imagery on a circuit board is known as

- (a) silkscreen.
- (b) solder mask.
- (c) thieving.

*If choice a is selected set score to 1.*

**221.** The layer of protective material laid over the metal (on a PCB) to prevent short circuits and corrosion is known as

- (a) thieving.
- (b) silkscreen.
- (c) solder mask.

*If choice c is selected set score to 1.*

**222.** What gives the PCB its green colour (but nearly any colour is possible)?

- (a) silkscreen.
- (b) thieving.
- (c) solder mask.

*If choice c is selected set score to 1.*

**223.** What is the function of the PCB solder mask?

- (a) To hold electronic components into place.
- (b) To insulate the PCB copper traces.
- (c) To give mounting facility for an electronic unit.

*If choice b is selected set score to 1.*

**224.** What is a closed loop servo system?

- (a) This is a servo system with a positive feedback.
- (b) This is a servo system with a negative feedback.
- (c) This is a servo system with a differential feedback.

*If choice b is selected set score to 1.*

**225.** What is the function of a closed loop system?

- (a) To control the output of a system with positive feedback.
- (b) To measure the output signal of a synchro.
- (c) To keep a parameter at a set reference level.

*If choice c is selected set score to 1.*

**226.** What is true for a closed loop system?

- (a) No feedback loop is required in a closed loop system.
- (b) Sometimes a feedback loop is required in a closed loop system.
- (c) A feedback loop is required in a closed loop system.

*If choice c is selected set score to 1.*

**227.** What is meant with an "error signal"?

- (a) This is the difference between the "actual value" and the position of the output servo.
- (b) This is the difference between the "wanted value" and the position of the input servo.
- (c) This is the difference between the "wanted value" and the "actual value".

*If choice c is selected set score to 1.*

**228.** What is the function of a transducer?

- (a) A transducer measures the input value of a servo system.
- (b) A transducer measures the "error signal" in a servo system.
- (c) A transducer measures the output of a servo system.

*If choice c is selected set score to 1.*

**229.** What is the function of the error generating part of a servo system?

- (a) To reposition the output to the desired value.

- (b) To generate a signal that depends on the difference between the actual value and the desired value.
- o (c) To reposition the input to the desired value.

*If choice b is selected set score to 1.*

**230.** What is the advantage of using a capacitive fuel capacity meter?

- o (a) It can be used with any type of fuel without calibration.
- o (b) It can be used a lifetime without calibration.
- (c) It has no moving parts, preventing any mechanical problems.

*If choice c is selected set score to 1.*

**231.** When is a capacitive fuel capacity meter most accurate?

- o (a) When the tank is 100% filled.
- (b) When the tank is 20% filled.
- o (c) When the tank is 50% filled.

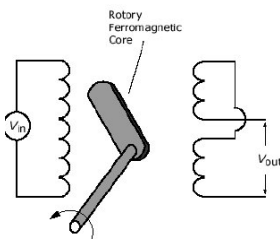
*If choice b is selected set score to 1.*

**232.** The primary winding of a LVDT is energized with:

- (a) an AC voltage.
- o (b) a DC voltage.
- o (c) An AC and a DC voltage.

*If choice a is selected set score to 1.*

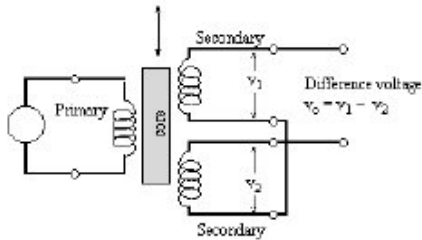
**233.** This is the schematic picture of a:



- o (a) LVDT.
- o (b) Differential synchro.
- (c) RVDT.

If choice c is selected set score to 1.

**234.** This the schematic picture of a:



- (a) Differential synchro.
- (b) LVDT.
- (c) RVDT.

If choice b is selected set score to 1.

**235.** What does the abbreviation LVDT mean?

- (a) Linear Voltage Difference Transformer
- (b) Linear Variable Displacement Transducer
- (c) Linear Variable Differential Transformer

If choice c is selected set score to 1.

**236.** A synchro has....

- (a) 1 coil on the rotor and 3 coils on the stator.
- (b) 2 coils on the rotor and 2 coils on the stator.
- (c) 3 coils on the rotor and 2 coils on the stator

If choice a is selected set score to 1.

**237.** A servo system that overshoots and oscillates is

- (a) over damped.
- (b) under damped.
- (c) critically damped.

If choice b is selected set score to 1.

**238.** When a servo has reached its null and stopped, the velocity feedback is

- (a) maximum and anti-phase.
- (b) maximum and in phase.
- (c) zero.

*If choice c is selected set score to 1.*

**239.** With a constant input to a speed control servo, the servo motor

- (a) moves to a certain position.
- (b) moves at a constant speed.
- (c) oscillates, but otherwise does not move.

*If choice b is selected set score to 1.*

**240.** A closed loop servomechanism

- (a) must only have position feedback.
- (b) can have either position or velocity feedback.
- (c) must have both position and velocity feedback.

*If choice b is selected set score to 1.*

**241.** Damping in a servomechanism is easier to apply if

- (a) the mechanism is heavy and has high inertia.
- (b) the mechanism is light and has high inertia.
- (c) the mechanism is light and has low inertia.

*If choice c is selected set score to 1.*

**242.** The output of a tacho-generator is

- (a) proportional to speed of rotation.
- (b) proportional to position.
- (c) proportional to acceleration.

*If choice a is selected set score to 1.*

**243.** An open loop system is one which has

- (a) position feedback loop.

- (b) no direct feedback loop.
- o (c) rate feedback loop.

*If choice b is selected set score to 1.*

**244.** The speed feedback signal of a closed-loop speed control system is in....

- (a) anti-phase with the demand signal.
- o (b) phase advanced by  $90^\circ$  with respect to the input signal.
- o (c) phase with the input demand signal.

*If choice a is selected set score to 1.*

**245.** Velocity feedback

- o (a) prevents dead space errors.
- (b) opposes the demand input.
- o (c) assists the demand input.

*If choice b is selected set score to 1.*

**246.** A synchro transformer is used to

- (a) derive an error voltage from a synchro transmitter signal and a shaft position.
- o (b) add the output of two synchro transmitters.
- o (c) obtain a 26 VAC reference.

*If choice a is selected set score to 1.*

**247.** An E & I bar output at datum has

- o (a) no induced voltage in the secondary windings.
- o (b) an imbalance of voltages in the secondary windings.
- (c) equal and opposite voltages induced in the secondary windings.

*If choice c is selected set score to 1.*

**248.** A differential synchro stator has

- o (a) two windings.
- o (b) one winding.
- (c) three windings.

*If choice c is selected set score to 1.*

**249.** In a control synchro the stator current ceases to flow if...

- (a) CT rotor is at null.
- (b) power is removed.
- (c) the two rotors are aligned.

*If choice b is selected set score to 1.*

**250.** In a speed control servo system (rate control), the purpose of the tacho-generator is

- (a) to make it run at constant speed.
- (b) to make the velocity proportional to servo demand.
- (c) to make the deflection proportional to servo demand.

*If choice a is selected set score to 1.*

**251.** The rotor of a torque synchro indicator is

- (a) short circuited.
- (b) connected in series with the transmitter stator coil.
- (c) supplied with an excitation voltage.

*If choice c is selected set score to 1.*

**252.** The null position of a torque synchro system is when

- (a) the TX and TR rotors are 90° to each other.
- (b) the TX and TR rotors are parallel to each other.
- (c) the TX and TR rotors are 120° to each other.

*If choice b is selected set score to 1.*

**253.** A tacho-generator output is

- (a) variable voltage, constant frequency.
- (b) variable frequency, variable voltage.
- (c) variable frequency, constant voltage.

*If choice a is selected set score to 1.*

**254.** In a torque synchro system, the power supply is connected to

- (a) the rotor windings of the transmitter only.
- (b) the rotor windings of both the transmitter and receiver.
- (c) the stator windings of the transmitter.

*If choice b is selected set score to 1.*

**255.** The power supply to a torque system is....

- (a) DC
- (b) AC or DC
- (c) AC

*If choice c is selected set score to 1.*

**256.** The power supply of a synchro system is connected to the....

- (a) transmitter and receiver rotors.
- (b) transmitter rotor only.
- (c) transmitter stator.

*If choice a is selected set score to 1.*

**257.** The control windings of a two phase servomotor is supplied with AC voltage of

- (a) variable amplitude, variable phase.
- (b) constant amplitude.
- (c) variable phase.

*If choice a is selected set score to 1.*

**258.** When a servomotor overshoots after a step input and oscillates it is

- (a) critically damped.
- (b) under damped.
- (c) over damped.

*If choice b is selected set score to 1.*

**259.** Reversal of the complete power to a torque synchro system will

- (a) displace the receiver rotor by 180°.

- (b) cause reverse rotation of the receiver rotor.
- (c) have no effect.

*If choice c is selected set score to 1.*

**260.** The result of cross connecting two of the transmission leads in a torque synchro system and then turning the rotor of the transmitter 60° clockwise would be

- (a) the receiver would move 60° clockwise.
- (b) the receiver would move 120° anti-clockwise.
- (c) the receiver would move 60° anti-clockwise.

*If choice c is selected set score to 1.*

**261.** If the rotor of a control synchro sticks

- (a) the position feedback will oscillate.
- (b) high current will flow.
- (c) the system hunts.

*If choice b is selected set score to 1.*

**262.** With the reversal of the connections to the rotor of the transmitter of a torque synchro, the position of the receiver rotor will be

- (a) changed by 180°
- (b) changed by 120°.
- (c) unchanged.

*If choice a is selected set score to 1.*

**263.** The result of reversing the rotor connections to the receiver of a torque synchro system is that the rotor position

- (a) is changed by 180°
- (b) is unchanged.
- (c) is changed by 120°.

*If choice a is selected set score to 1.*

**264.** Reversal of two of the stator connections on a torque synchro receiver would cause

- (a) the output to move in the reverse direction to the input.

- (b) the output to move in the same direction as the input.
- (c) the transmitter to become the receiver.

*If choice a is selected set score to 1.*

***If assessment score is 0% to 100% Feedback***