

Video Solution on Website:-

<https://physicsaholics.com/home/courseDetails/63>

Video Solution on YouTube:-

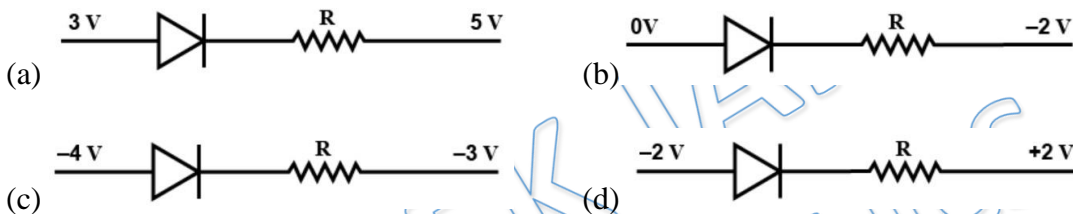
<https://youtu.be/qAz8UINy91Y>

Written Solution on Website:-

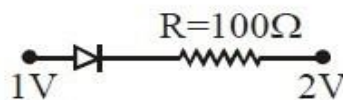
<https://physicsaholics.com/note/notesDetails/22>

- Q 1. PN-junction diode works as an insulator, if connected
 (a) To A.C. (b) In forward bias
 (c) In reverse bias (d) None of these

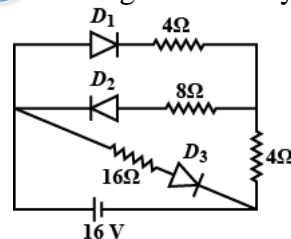
- Q 2. Which one of the following represents forward bias diode?



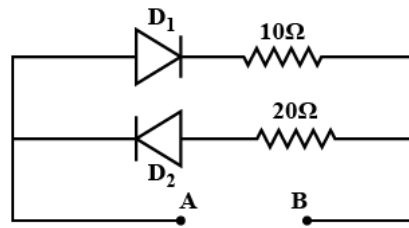
- Q 3. Assuming that the junction diode is ideal, the current in the arrangement shown in the figure is



- (a) 0 mA (b) 2 mA
 (c) 10 mA (d) 30 mA
- Q 4. In the given circuit, the current through the battery is:

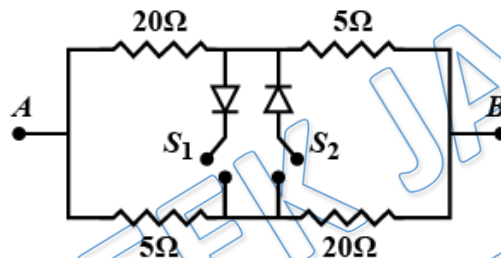


- (a) 1.5 A (b) 2 A
 (c) 3 A (d) 5.33 A
- Q 5. Two ideal junction diodes D_1 , D_2 are connected as shown in the figure. A 3V battery is connected between A and B. The current supplied by the battery, if its positive terminal is connected to A, is



- (a) 0.1 A (b) 0.3 A
(c) 0.9 A (d) 90 A

- Q 6. In a reverse biased diode, when the applied voltage changes by 1V, the current is found to change by $0.5\mu\text{A}$. The reverse bias resistance of the diode is
 (a) $2 \times 10^5 \Omega$ (b) $2 \times 10^6 \Omega$
 (c) 200 Ω (d) 2 Ω
- Q 7. In the circuit shown below, V_A and V_B are the potentials at A and B, R is the equivalent resistance between A and B, S_1 and S_2 are switches, and the diodes are ideal



- (a) If $V_A > V_B$, S_1 is open and S_2 is closed then $R = 8 \Omega$
 (b) If $V_A > V_B$, S_1 is closed and S_2 is open then $R = 10.5 \Omega$
 (c) If $V_A > V_B$, S_1 is open and S_2 is closed then $R = 12.5 \Omega$
 (d) If $V_A > V_B$, S_1 is closed and S_2 is open then $R = 8 \Omega$
- Q 8. In the following circuit the equivalent resistance between A and B is
-
- (a) $\frac{20}{3} \Omega$ (b) 10 Ω
(c) 16 Ω (d) 20 Ω
- Q 9. The reverse biasing in a PN junction diode
 (a) Decreases the potential barrier
 (b) Increases the potential barrier
 (c) Increases the number of minority charge carriers
 (d) Increases the number of majority charge carriers
- Q 10. On increasing the reverse bias to a large value in a p-n junction diode, current
 (a) Increases slowly
 (b) Remains fixed
 (c) Suddenly increases
 (d) Decreases slowly



- Q 11. The electric field in the depletion layer of an unbiased p-n junction is
(a) zero (b) from P-side to N-side
(c) from N-side to P-side (d) not defined
- Q 12. A potential barrier of 0.3 V exists across a p-n junction. An electron with speed 5×10^5 m/sec approaches this p-n junction from n-side, what will be its speed on entering the p-side?
(a) 4.8×10^5 m/s (b) 3.8×10^5 m/s
(c) 5.8×10^5 m/s (d) 6.8×10^5 m/s
- Q 13. In a p-n junction, the thickness of depletion region is 2×10^{-7} m and potential barrier across the junction is 0.20 V. What will be the intensity of electric field in this region?
(a) 10^6 V/m
(b) 10^7 V/m
(c) 4×10^{-7} V/m
(d) 1.4×10^{-6} V/m
- Q 14. In a photo diode the conductivity increases when the material is exposed to light. It is found that the conductivity changes only if the wavelength of incident light is less than 500 nm. What is the band gap? Use $h = 6.6 \times 10^{-34}$ Js, $c = 3 \times 10^8$ m/s.
(a) 2 eV (b) 1.81 eV
(c) 2.48 eV (d) 0.86 eV
- Q 15. An LED is constructed from a P-N junction based on a certain semi-conducting material whose energy gap is 1.9 eV. Then the wavelength of the emitted light is
(a) 2.9×10^{-9} m (b) 1.6×10^{-8} m
(c) 6.5×10^{-7} m (d) 9.1×10^{-5} m
- Q 16. If the input frequency is 50 Hz. In half - wave rectification, what is the output frequency? And What is the output frequency of a full - wave rectifier for the same input frequency?
(a) 50 Hz, 25 Hz (b) 25 Hz, 50 Hz
(c) 50 Hz, 100 Hz (d) 25 Hz, 100 Hz
- Q 17. In half wave rectifier, a p-n diode with internal resistance 20Ω is used. If the load resistance of $2 \text{ K}\Omega$ is used in the circuit, then the efficiency of this half wave rectifier is (in percentage)
(a) 40.6 % (b) 40.2 %
(c) 38.4 % (d) 42.8 %
- Q 18. In full-wave rectifier, a p-n junction diodes with internal resistance 20Ω is used. If the load resistance of 980Ω is used in the circuit, then the efficiency is nearly
(a) 37.5 % (b) 79.57 %
(c) 25 % (d) 50 %
- Q 19. In the half wave rectifier circuit operating with 50Hz mains frequency. The fundamental frequency in the ripple will be



- (a) 100 Hz (b) 20 Hz
(c) 50 Hz (d) 25 Hz

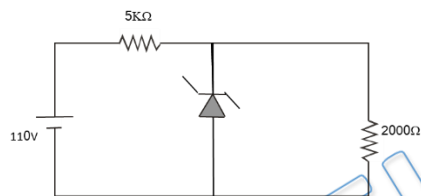
Q 20. If the rms value of sinusoidal input to a full wave rectifier is $\frac{V_0}{\sqrt{2}}$, then the rms value of the rectifier's output is?

- (a) $\frac{V_0}{\sqrt{2}}$ (d) $\frac{V_0^2}{\sqrt{2}}$
(c) $\frac{V_0^2}{2}$ (d) $\sqrt{2}V_0$

Q 21. The value of form factor in case of full wave rectifier is:

- (a) 1.11 (b) 1.57
(c) 1.27 (d) 0.48

Q 22. In given circuit If breakdown voltage across Zener diode is 10 V, Find current through Zener diode ?



- (a) 10 mA (b) 20 mA
(c) 15 mA (d) 25 mA

Answer Key

Q.1 c	Q.2 b	Q.3 a	Q.4 c	Q.5 b
Q.6 b	Q.7 a	Q.8 c	Q.9 b	Q.10 c
Q.11 c	Q.12 b	Q.13 a	Q.14 c	Q.15 c
Q.16 c	Q.17 b	Q.18 b	Q.19 c	Q.20 a
Q.21 a	Q.22 c			