



These questions are at the end of Chapter 2 starting on page 73.

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|------|--------------------------|------|--------------------|
| §2.2 | 7. | §2.5 | 26, |
| §2.3 | 8, 9, 10, 11, 12, 13, 18 | §2.6 | 32, 33, 34, 35, 37 |
| §2.4 | 19, 22, 23, 24 | §2.7 | 38, 39 |
| | | §2.8 | 41, 43, 47 |

ANSWERS

- §2.2 7. D_1 is reverse biased, therefore $V_{D1} = 10V$, $V_{R1} = 0V$
 D_2 is forward biased, therefore $V_{D2} = 0V$, $V_{R2} = 10V$
- §2.3 8. D_1 is reverse biased, therefore $V_{D1} = 6V$ $V_{R1} = 0V$ $I_T = 0A$
9. D_1 is forward biased, therefore $V_{D1} = 0.7V$ $V_{R1} = 0.3V$ $I_T = 3 mA$
10. D_1 is reverse biased, therefore $V_{D1} = 3V$ $V_{R1} = 0V$ $V_{R2} = 0V$ $I_T = 0A$
11. D_1 is reverse biased, therefore $V_{D1} = 10V$ $V_{R1} = 0V$ $I_T = 0A$
 D_2 is forward biased, therefore $V_{D2} = 0.7V$ $V_{R2} = 9.3V$ $I_T = 5.17 mA$
12. D_1 & D_2 are forward biased, therefore $V_{D1} = 0.7V$ $V_{D2} = 0.7V$ $V_{R1} = 3.6V$ $I_T = 18mA$
13. D_1 & D_2 are forward biased, therefore $V_{D1} = 0.7V$ $V_{D2} = 0.7V$ $V_{R1} = 2.53V$ $V_{R2} = 5.06V$
 $I_T = 25.3 mA$
18. $I_T = 8.53 mA$ $V_{R1} = 1.02 V$ Percentage error = 5.15%
- §2.4 19. Minimum PRV rating is 120V
22. Minimum acceptable Average forward current rating is $9.67 mA \times 1.2 = 11.6 mA$
23. Minimum acceptable P_D rating is $6.77 mW \times 1.2 = 8.12 mW$
24. Maximum value of forward current = $1.71A \times 0.8 = 1.37A$
- §2.5 26. $V_F = 0.75V$
- §2.6 32. The derated P.R.V. for Fig. 2.48a is 120V. This allows these diodes to be used: 1N5393, 1N5395, 1N5397, 1N5398, 1N5399
33. Under **electrical characteristics**, the maximum reverse current is shown to be $300 \mu A$ (rated @ $T=150^\circ C$)
35. Min. $I_O = 29.4 A$. Min $V_{RRM} = 270 V$. Use diode 1N3495.
34. The surge current rating is the same for all diodes in the series : 50A for 1 cycle
37. $V_{RRM} = 564V$ & $I_O = 4.8A$ Therefore the MR756 is the minimum acceptable.
- §2.7 38. 25Ω
39. Figures (a), (c), (d), & (e) are biased for normal zener operation.
- §2.8 41. $I_{ZM} = 147 mA$
43. $P_{D(MAX)} = 4.44 W$
47. The derated P_D is 2.16 W. Therefore only 1N5349A will suffice.(from Fig 2.34)