



Course Title and Code Number:
Principles and Applications of Electronic Engineering
Second Year (Agricultural Engineering)
Time Allowed: One hour

اسم المقرر والرقم الكودي له:
مبادئ الهندسة الإلكترونية وتطبيقاتها
السنة الدراسية الثانية (هندسة زراعية)
الزمن: ساعة

Fill the correct choice circle in the answer sheet. Choice e is none of the above: (60 marks)

1. How much voltage is there across the second approximation of a silicon diode when it is forward biased?
a. 0 b. 0.3 V c. 0.7 V d. 1 V
2. How much current is there through the second approximation of a silicon diode when it is reverse biased?
a. 0 b. 1 A c. 300 mA d. 0.1 V
3. How much forward diode voltage is there with the ideal diode approximation?
a. 0 b. 0.7 V c. More than 0.7 V d. 1 V

For Figure 1, answer questions 4–8:

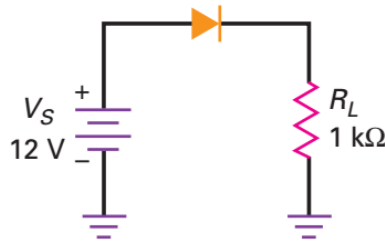


Figure 1

4. How much load current is there with the ideal diode?
a. 0 b. 11.3 mA c. 12 mA d. 25 mA
5. How much load current is there with the second approximation?
a. 0 b. 11.3 mA c. 12 mA d. 25 mA
6. How much load current is there with the third approximation?
a. 0 b. Between 11.3mA and 12 mA c. Less than 11.3 mA d. More than 12 mA
7. If the diode is open, the load voltage is
a. 0 b. 11.3 V c. 12 V d. 0.7 V
8. This circuit is called
a. Clamper b. Full-wave rectifier c. Bridge rectifier d. Limiter

For Figure 2, answer questions 9—17

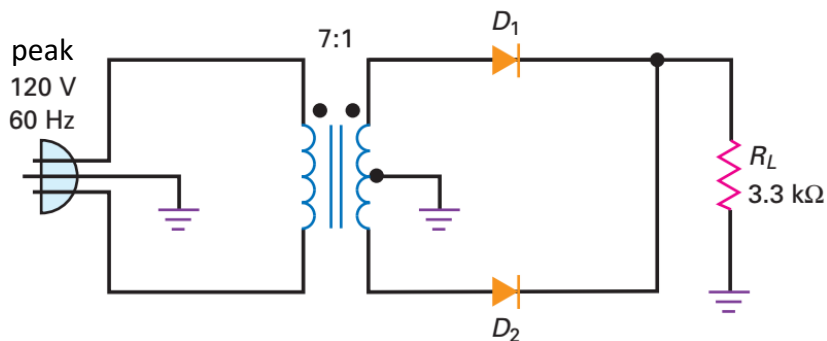


Figure 2

9. The output frequency is:
 - a. 30 Hz
 - b. 60 Hz
 - c. 120 Hz
 - d. 0 Hz
10. Assume ideal diodes, the peak output voltage is:
 - a. 34.28 V
 - b. 17.14 V
 - c. 60 V
 - d. 8.57 V
11. Assume ideal diodes, the DC output voltage is:
 - a. 5.46 V
 - b. 10.92 V
 - c. 8.57 V
 - d. 2.73 V
12. Assume the diode second approximation, the peak output voltage is:
 - a. 7.87 V
 - b. 5.46 V
 - c. 8.57 V
 - d. 7.17 V
13. Assume the diode second approximation, the DC output voltage is:
 - a. 0.7 V
 - b. 2.5 V
 - c. 5.0 V
 - d. 10.0 V
14. Assume the diode second approximation, the load current is:
 - a. 0.76 mA
 - b. 3.03 mA
 - c. 1.52 mA
 - d. 0.21 mA
15. The PIV across the diode is
 - a. 34.28 V
 - b. 17.14 V
 - c. 7.17 V
 - d. 8.57 V
16. If a capacitance-input filter is inserted parallel to the load resistance, the PIV across the diode is:
 - a. 34.28 V
 - b. 17.14 V
 - c. 15.74 V
 - d. 8.57 V
17. Assume the diode second approximation. If a capacitance-input filter is inserted parallel to the load resistance with $C=100\ \mu\text{F}$, the ripple voltage is:
 - a. 12.6 mV
 - b. 25.3mV
 - c. 253.2 mV
 - d. 126 mV

For Figure 3, answer questions 18—26

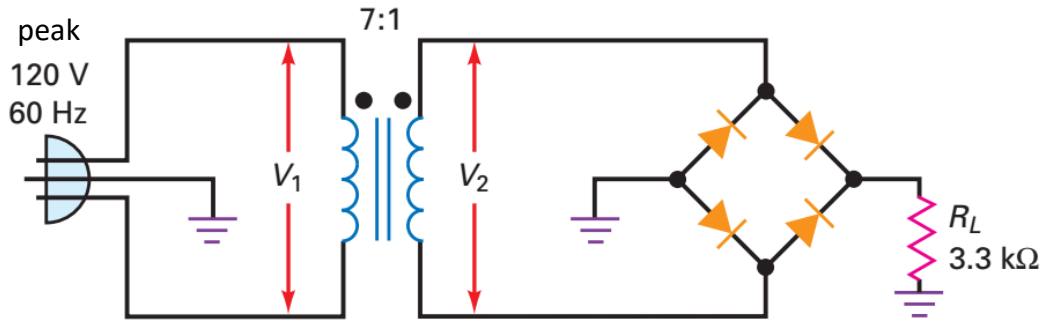
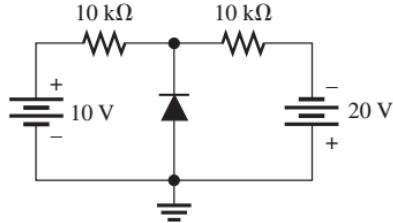


Figure 3

18. The output frequency is
 - a. 30 Hz
 - b. 60 Hz
 - c. 120 Hz
 - d. 0 Hz
19. Assume ideal diodes, the peak output voltage is:
 - a. 34.28 V
 - b. 17.14 V
 - c. 60 V
 - d. 8.57 V
20. Assume ideal diodes, the DC output voltage is:
 - a. 5.46 V
 - b. 8.57 V
 - c. 17.14 V
 - d. 10.92 V
21. Assume the diode second approximation, the peak output voltage is:
 - a. 15.74 V
 - b. 17.14 V
 - c. 32.88 V
 - d. 16.44 V
22. Assume the diode second approximation, the DC output voltage is:
 - a. 0.7 V
 - b. 2.5 V
 - c. 5.0 V
 - d. 10.0 V
23. Assume the diode second approximation, the load current is:
 - a. 0.76 mA
 - b. 3.03 mA
 - c. 1.52 mA
 - d. 0.21 mA
24. The PIV across the diode is
 - a. 34.28 V
 - b. 15.74 V
 - c. 17.14 V
 - d. 16.44 V
25. If a capacitance-input filter is inserted parallel to the load resistance, the PIV across the diode is:
 - a. 34.28 V
 - b. 15.74 V
 - c. 17.14 V
 - d. 16.44 V
26. Assume the diode second approximation. If a capacitance-input filter is inserted parallel to the load resistance with $C=100\ \mu\text{F}$, the ripple voltage is:
 - a. 12.6 mV
 - b. 25.3 mV
 - c. 253.2 mV
 - d. 126 mV

27. The voltage across the diode in Figure is



- a. -0.7 V b. -5 V c. 0.7 V d. 20 V

29. Choose the option for the output voltage V_o waveform in this Figure.

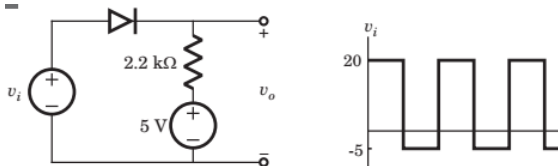
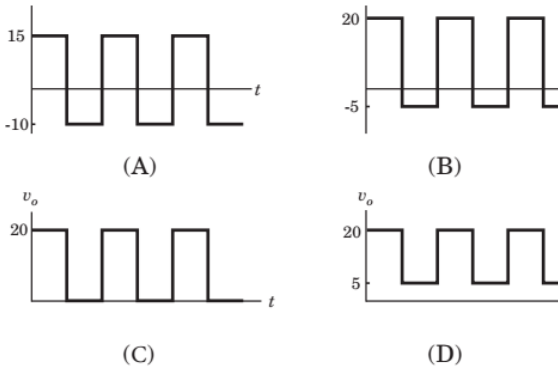


Fig.3.1.1



31. Choose the option for the output voltage V_o waveform in this Figure.

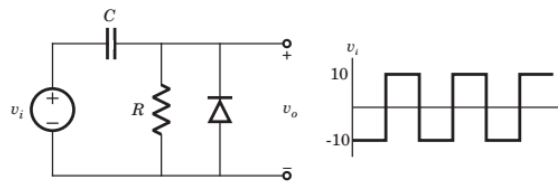
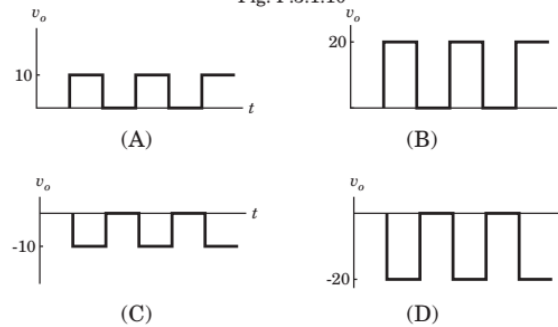
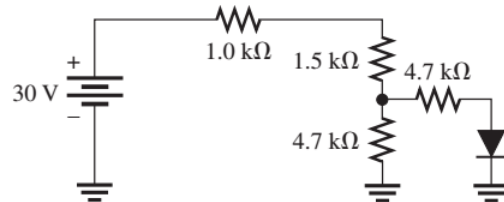


Fig. P.3.1.10



28. The voltage across the diode in Figure is



- a. -0.7 V b. 19.5 V c. 0.7 V d. 14.5 V

30. Choose the option for the waveform of output voltage V_o in this Figure.

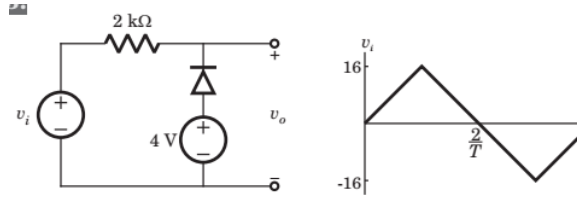
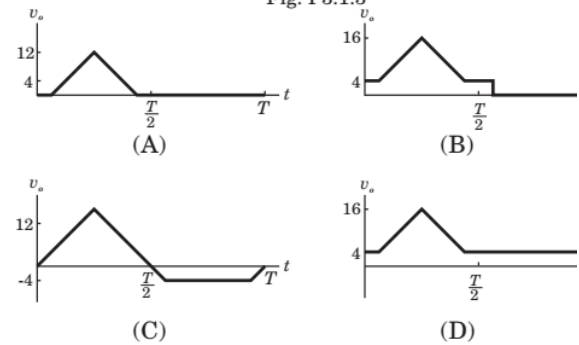


Fig. P3.1.3



32. In the circuit of Figure, D_1 and D_2 are ideal diodes. The current i_1 and i_2 are

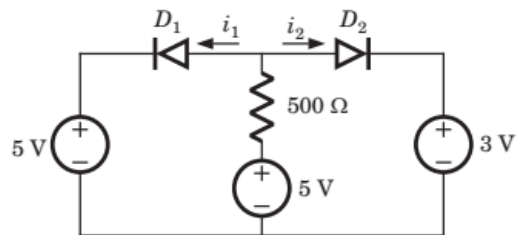


Fig. P3.1.12

- a. $0, 4\text{ mA}$
 b. $4\text{ mA}, 0$
 c. $0, 8\text{ mA}$
 d. $8\text{ mA}, 0$