

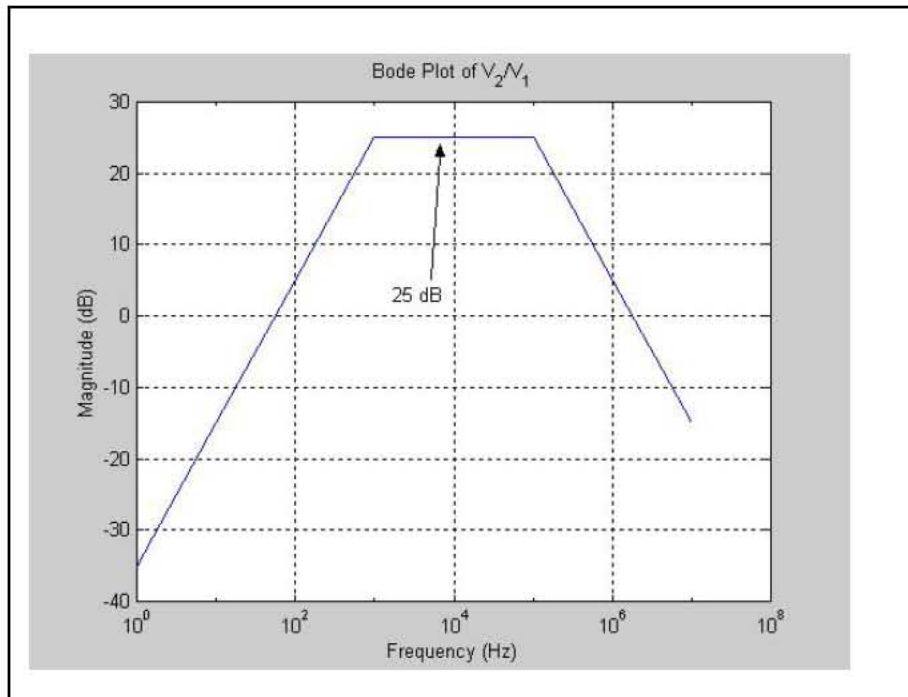
Q9 A 4:1 step down transformer uses a 60 Vac source on the primary windings. There is 120 mA flowing through the load resistance on the secondary windings. What is the resistive load?

- a. 500 OHMS
- b. 2 K-OHMS
- c. 125 OHMS

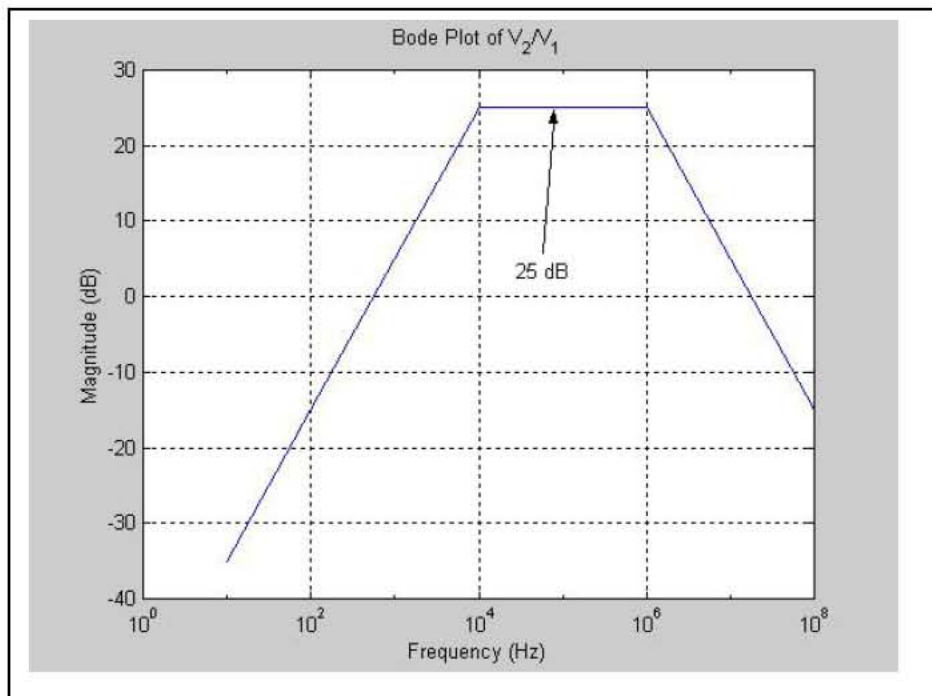
Q10 Sketch a Bode plot for the following transfer function:

$$\frac{V_2}{V_1} = \frac{20jf/10,000}{(1+jf/10,000)(1+jf/1,000,000)}$$

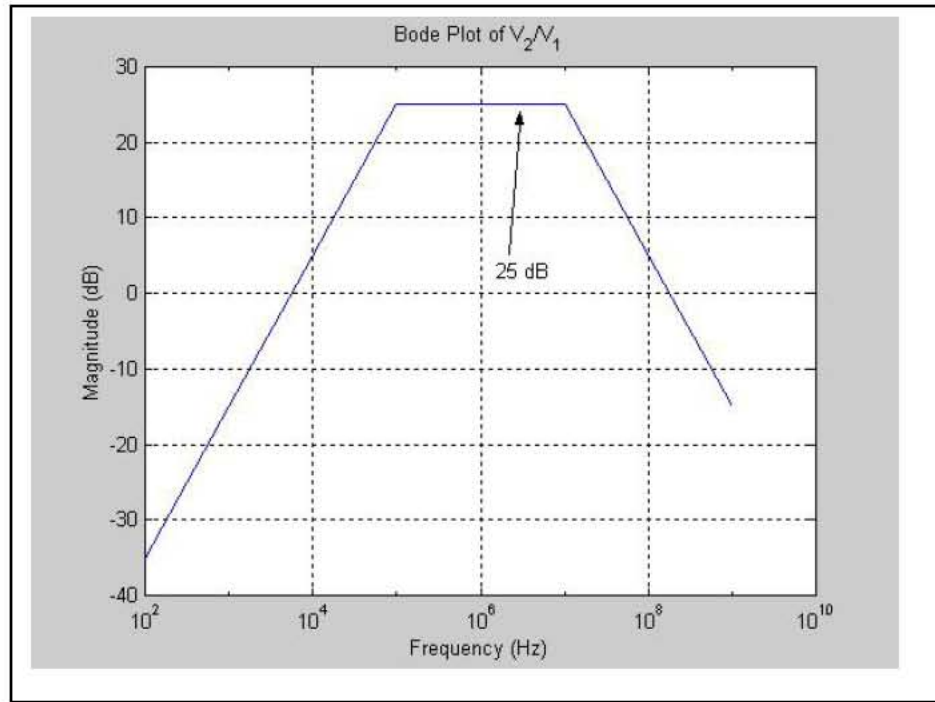
a.



b.



c.



Q11 The outputs of two "NAND" gates are connected to the inputs of an "EXCLUSIVE OR" gate. Each of the "NAND" gates has one input at logic high level, and the other input at a logic low level. What is the output of the "EXCLUSIVE OR" gate?

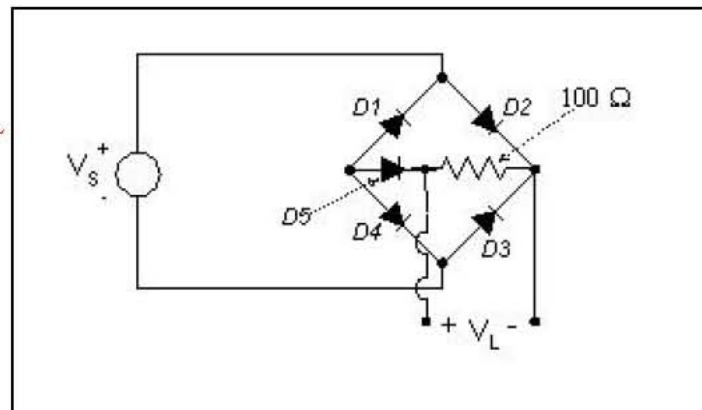
- a. logic high
- b. logic low
- c. none of the above

Q12 A fully loaded 440 V, three phase motor draws 12.4 A at 86% power factor (pf). Its speed is 1730 rpm and its torque output to a mechanical load is 29.1 lb-ft x 1.356 = 39.5 Nm. What is: 1. The output horsepower? 2. The efficiency?

- a. 1. Horsepower = 7.15 hp; 2. Efficiency = 84%
- b. 1. Horsepower = 9.58 hp; 2. Efficiency = 88%
- c. 1. Horsepower = 8.35 hp; 2. Efficiency = 86%

Q13 Consider the circuit shown in the following figure: V_S is a sinusoidal input source waveform with zero (0) DC value.

- a) Which diodes are ON when $V_S > 0$?
- b) Which diodes are ON when $V_S < 0$?
- c) What is the average value of the load voltage, V_L



- a. a) D2 and D4, b) D1, D3 and D5, c) $0.25 * V_S$
- b. a) D1, D3 and D5, b) D2 and D4, c) $0.5 * V_S$
- c. none of the above