

**LISTA DE EXERCÍCIOS 1 - CIRCUITOS ELÉTRICOS II**  
**Livro Hayt 7° edição**

**CAPITULO 10 - ANALISE SENOIDAL EM REGIME PERMANENTE**

**Exercícios indicados seguidos da resposta**

1.

A)  $8.5\sin(290.9t + 325.0^\circ)$

B)  $8.5\cos(290.9t - 125^\circ)$

C)  $-4.785\cos 290.9t + 6.963\sin 290.9t$

5.  $f=85.20$  Mrad/s;  $V_m = 38.73$  V;  $\varphi = \pi$

7.

a)

$-6 \cos(2\pi 60t + 9^\circ)$  lags  $6 \cos(2\pi 60t - 9^\circ)$   
by  $360 - 9 - 189 = 162^\circ$ .

b)

$-\cos(t - 100^\circ)$  lags  $\cos(t - 100^\circ)$  by  $180^\circ$ .

c)

$-\sin t$  lags  $\sin t$  by  $180^\circ$ .

d)

$7000 \cos(t - \pi)$  lags  $9 \cos(t - 3.14^\circ)$   
by  $180 - 3.14 = 176.9^\circ$ .

9. Desafio

a)  $0.8$  V.

b)  $0.7709$  V.

c)  $0.8141$  V.

d)  $0.8046$  V.

10.

b)

$V_m = 110\sqrt{2} = 155.6$  V,  $115\sqrt{2} = 162.6$  V,  $120\sqrt{2} = 169.7$  V

13.

$742.7 \cos(500t - 21.81^\circ)$  mA.

14.

a)  $0.2544 \cos(500t - 32.01^\circ)$  A

b)  $31.80 \cos(500t + 57.99^\circ)$  mA

15. Desafio

- A)  $25.83\mu\text{s}$   
B)  $10.121$  or  $25.83\mu\text{s}$   
c)  $t = 15.708\mu\text{s}$  and also  $t = 25.83\mu\text{s}$

16.

- a)  $i_L = 81.76 \text{ mA}$   
b)  $v_L = -0.8462 \text{ V}$

**Revisão de Numeros Complexo**

Exercícios 22 a 27

Desafio

28.

$34.93e^{j(40t-53.63^\circ)} \text{ V}$

29.

$65.12e^{j(10t+125.62^\circ)} \text{ A}$

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31.

A)

$12\angle 20^\circ \text{ A}$

b)

$7.616\angle 113.20^\circ \text{ A}$

c)

$3.910\angle -108.40^\circ \text{ A}$

d)

$-64.95 \text{ V}$

e)

$53.75 \text{ V}$

32.

a)

$-4.294 \text{ A}$

b)

$3.750 \text{ A}$

c)

$50\angle -130^\circ \text{ V}$

d)

$36.06\angle 56.31^\circ \text{ V}$

e)

$$72.27 \angle -63.87^\circ \text{ V}$$

34.

$$v_s(t) = 35.47 \cos(500t + 58.93^\circ) \text{ V.}$$

39.

a)  $-j291.8 \Omega$ .

b)  $-j2.918 \Omega$ .

c)  $-j291.8 \text{ m}\Omega$ .

d)  $-j291.8 \text{ n}\Omega$ .

41.

a)  $478.0 + j175.65 \Omega$

b)  $587.6 + j119.79 \Omega$

48.

a)  $C = 1.437 \mu\text{F}$

b)  $C = 8.956 \mu\text{F}$

53.

a)  $j87.96 \text{ mS}$

b)  $j8.796 \text{ S}$

c)  $j879.6 \text{ S}$

d)  $j8.796 \times 10^9 \text{ S}$

54.

a) Susceptance is 0

b)  $100 \text{ S}$

c)  $B = -9.999 \text{ mS}$ .

57.

a)

$$10^5 \text{ rad/s}$$

b)

$$10^5 \text{ rad/s}$$

c)

$$102.06 \text{ krad/s}$$

d)

$$52.23 \text{ and } 133.95 \text{ krad/s}$$

58.

a)  $|V_1| = 20 \text{ V}$

b)  $|V_2| = 20 \text{ V}$

c)  $|V_3| = 44.72 \text{ V}$

d)  $|V_m| = 45.60 \text{ V}$

### **Análise Nodal e Análise de Malhas**

63.

$$34.36 \angle 23.63^\circ \text{ V}$$

64.

$$13.198 \angle 154.23^\circ \text{ A}$$

65.

$$v_x(t) = 70.71 \cos(1000t - 45^\circ) \text{ V}$$

66.

a)  $V_3 = 34.65 \angle 94.97^\circ \text{ V}$

b)  $Z_c = -j2.449 \text{ k}\Omega$

67.

$$i_x(t) = 1.2127 \cos(100t - 75.96^\circ) \text{ A}$$

70. Fazer por análise nodal

$$v_2(t) = 9.81 \cos(10^3 t - 13.36^\circ) \text{ mV}$$

72.

$$\begin{aligned} i_1(t) &= 1.44 \cos(2t - 6.613^\circ) \text{ mA} \\ i_2(t) &= 2.038 \cos(2t - 6.500^\circ) \text{ mA} \\ i_3(t) &= 5.998 \cos(2t + 179.8^\circ) \text{ A} \end{aligned}$$

### **Teoremas**

76.

$$V_{th} = 57.35 \angle -55.01^\circ \text{ V}$$

$$Z_{th} = 4.698 - j6.711 \Omega$$

78.

a)

$$v_1(t) = 5 \cos(1000t + 90^\circ) \text{ V}$$

b)

$$v_1(t) = 11.79 \cos(1000t + 135^\circ) \text{ V.}$$

79.  $R_n = 2.5 \Omega$ ;  $L_n = 1.25 \text{ H}$ ;  $I_n = 0.8944 \angle -63.43^\circ \text{ A}$

81.

$$V_{th} = 158.11 \angle 108.43^\circ \text{ V}$$

$$Z_{th} = j150 \Omega$$

82. Fazer por análise nodal

$$i(t) = 51.07 \cos(10^3 t + 43.23^\circ) \text{ mA}$$

### **Diagrama Fasorial**

92.

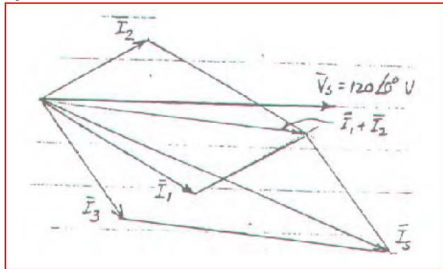
a)

$$I_1 = \frac{120}{40 \angle 30^\circ} = 3 \angle -30^\circ \text{ A}$$

$$I_2 = \frac{120}{50 - j30} = 2.058 \angle 30.96^\circ \text{ A}$$

$$I_3 = \frac{120}{30 + j40} = 2.4 \angle -53.13^\circ \text{ A}$$

b)



c)

$$6.265 \angle -22.14^\circ \text{ A}$$