

Cap. 06 - Beer  
PÓRTICOS E MÁQUINAS

49 -  $F_{BD} = 204 \text{ N (C)}$  ;  $C_x = 96 \text{ N} \rightarrow$  ;  $C_y = 500 \text{ N} \uparrow$

51 -  $F_{BD} = 3900 \text{ N (T)}$  ;  $C_x = 3600 \text{ N} \leftarrow$  ;  $C_y = 700 \text{ N} \downarrow$

59 -  $F_{DC} = 6563 \text{ N (C)}$

69 -  $E_x = 150 \text{ N} \rightarrow$  ;  $E_y = 450 \text{ N} \uparrow$  ;  $A_y = 250 \text{ N} \uparrow$  ;  $A_x = 150 \text{ N} \leftarrow$

73 - a)  $A = 75 \text{ kN} \uparrow$  ;  $B = 162,5 \text{ kN} \uparrow$  ; b)  $D_x = 170 \text{ kN} \rightarrow$  ;  $D_y = 25 \text{ kN}$  ;

89 -  $C_x = 425 \text{ kN} \leftarrow$  ;  $C_y = 355 \text{ kN} \uparrow$  ;  $B_x = 425 \text{ kN} \rightarrow$  ;  $B_y = 55 \text{ kN}$  ;

97 -  $C = 2300 \text{ N}$   $\nearrow 19,18^\circ$  ;  $D_y = 2432 \text{ N} \downarrow$

103 -  $C = 22800 \text{ N} \rightarrow$  ;  $E = 30,33 \text{ kN}$   $\nearrow 40,74^\circ$

107 - a)  $M = 151,20 \text{ Nm}$  ; b)  $M = 64,80 \text{ Nm}$  .

111 -  $C_x = 3,72 \text{ kN} \leftarrow$  ;  $C_y = 14,26 \text{ kN} \downarrow$

113 -  $Q = 1650 \text{ N}$

Cap. 07 - Beer

FORÇAS EM CABOS.

79-  $F_x = 100 \text{ kN} \rightarrow$        $T_{\text{max}} = 114,13 \text{ kN}$   
 $E_y = 55 \text{ kN} \uparrow$

83-  $a = 3 \text{ m}$        $P = 1.177,20 \text{ N}$

85-  $P = 0,66 \text{ kN}$        $T = 0,69 \text{ kN}$

89- varia de  $1306 \text{ m}$  a  $1307,20 \text{ m}$

93-  $T_0 = 64,31 \text{ kN}$        $T_{\text{max}} = 78,86 \text{ kN}$

91-  $h = 0,1 \text{ m}$        $\theta = 2,29^\circ$

## Cap. 10 - Beer

### EXERCÍCIOS:

01; 02; 03; 04; 05; 06; 07; 08; 11; 12; 14; 19;  
27; 29; 46; 49; <sup>55</sup>56; 63; 64; 67; 69

### RESPOSTAS:

$$01 - m = 3,33 \text{ kg}$$

$$03 - F = 600 \text{ N} \rightarrow$$

$$05 - F = 500 \text{ N} \uparrow$$

$$07 - Q = 3F \operatorname{tg} \theta$$

$$11 - Q = F \left( \frac{c}{a} \operatorname{sen}^3 \theta - 1 \right)$$

$$19 - a) F = 14 \text{ N}; b) F = 54 \text{ N}$$

$$27 - P = 4kl (1 - \cos \theta) \operatorname{tg} \theta$$

$$29 - x = 0,39 \text{ m}$$

$$49 - P = 4kl (1 - \cos \theta) \operatorname{tg} \theta$$

$$55 - \theta = 45^\circ \text{ ou } \theta = 225^\circ$$

$$63 - y \left( 1 - \frac{a}{\sqrt{a^2 + y^2}} \right) = \frac{P}{k}$$

$$67 - \theta = 180^\circ \text{ ou } \theta = 2 \operatorname{sen}^{-1} \frac{kl}{2(kl - P)}$$

$$69 - \sqrt{2} \operatorname{sen} \theta - \operatorname{tg} \theta = \frac{P}{ak}$$