

## A ]Wfcb HYW bc c[ m $^{\circ}5_h$ ]Y $^{\circ}gW$ ]Y $^{\circ}$ h b UW c VY b $^{\circ}$ 5 i Z ni a $^{\circ}5$ `nY]h\ c W $^{\circ}$

A ]Wfcb HYW bc`c[mij YfnY]W bYh Ua '- "\$+"&\$&) 'Y]bYb 5bgh]Y['XYf'5\_h]Y'i a '' ž+\$ı "'5bU`mgY'XYf'A Uf\_hhfYbXg'i bX I bhYfbY\a Ybgdfc[bcgYb"



A ]Wfcb 'HYW bc `c[mž' ⊕ W']gh'Y]b 'a i `h]bUh]cbU`Yf'D`UmYf']a
GdY]W YfW ]d!6YfY]W 'i bX'VYnY]W bYh'g]W 'gY`Vgh'U`g'9bhk ]W\_`Yfž
< YfghY``Yf'i bX'JYf\_Ài ZYf'j cb 'GdY]W YfdfcXi \_hYb"' → fY

B]YXYf`Uggi b[Yb`YfghfYW\_Yb`g]W\`ØVYf`X]Y`I G5ž`HU]k Ubž :Ygh`UbXW\]bUž'<cb[\_cb[ž`\*JdUb`i bX`9i fcdU"`8Yf`I a gUhn`]a `YhnhYb`; YgW\ÀZhg^U\f``U[`VY]`VYY]bXfi W\_YbXYb`&) ž%%`A]``]UfXYb I G!8c``Ufž`k À\fYbX`XYf`; Yk]bb`++, `A]``]cbYb`I G!8c``Uf`VYhfi["

## 5i gV`]W\_ Ui Z'VYj cfghY\YbXY E i UfhU`gnU\`Yb

GWW Ui Yb 'k ]f']b 'X]Y 'Ni \_i b Zh '5a 'A ]hhk cWX ž XYa '&) "'  $\Rightarrow$  b]ž b UWX A Uf\_hgWX 'i gg 'k ]fX 'A ]Wfcb 'X]Y '9f[ YVb]ggY 'ZØf 'X Ug 'Xf]hhY 'E i UfhU' XYg'; YgWX À Zhg'U\ fYg '& \$&) 'j YfÒZZY b h`]WX Yb "' 5 b U`mghY b 'g]b X cd h]a ]gh]gWX 'i b X 'Yfk UfhY b 'bcb!; 55 D! 9f[ YVb]ggY 'dfc '5\_h]Y 'j cb Yhk U '%ž\* \$ 'I G8 ž 'k Ug 'Y]b Ya 'a Ugg]j Ya '5 bgh]Y[ 'j cb 'i b[ YZÀ\ f '%) + DfcnYb h']a 'J Yf[ `Y]WX 'ni a 'J cf'U\ f 'Yb hgdf]WX h'' '5 i WX 'XYf'I a gUhn k ]fX 'j cfUi gg]WX h']WX 'i a '' \$ 'DfcnYb h'Ui Z'Yhk U', ž, \* 'A ]``]UfXYb 'I G8 ghY][ Yb ž 'Ub [ Yhf]Y V Yb 'X i fWX 'X]Y 'k UWX gYb X Y 'B UWX ZfU[ Y 'b UWX GdY]WX Yf! 'i b X 'GdY]WX YfWX ]dg ž ']b gV Ygcb X YfY 'ZØf'?  $\Rightarrow$  'i b X F YWX Yb n Yb hfi a gUb k Yb X i b [ Yb ž 'gc 'Y]b '6 Yf]WX h'j cb 'MU\ cc : ]b Ub WY "

 $8 \ Ug'GY[a Ybh'7ca di hY'UbX'BYhk cf_]b[``\Uh']a `nk Y]hYb'Ei UfhU`a ]h'(ž)*'A ]``]UfXYb'I G8 `Yhk U') + `DfcnYbh'ni a `; YgUa hi a gUhn VY][YhfU[Yb'''5bU`mghYb'j cb'K Y``g': Uf[c'i bX'7]h]`\UVYb'_Øfn`]W\]\fY'?i fgn]Y`Y'ZØf'X]Y'5_h]Y'Ub[Y\cVYb'''\=\fY'Ni j Yfg]W\h'VYfi \h Ui Z'A ]Wfcbg'ghUf_Yf'Dcg]h]cb']a `6YfY]W\'_Øbgh`]W\Y'\=bhY``][Ybnži bX'g]Y'Yfk UfhYbž'XUgg'X]Y'6]h!@]YZYfi b[Yb'Xi fW\'ZfØ\nY]h][Y DfcXi _h]cbgnm_`Yb']b'D7g'i bX'Ga Ufhd\cbYg'ghY][Yb'_ObbhYb''$ 

## 8]Y'Fc``Y'jcb'?Øbgh`]W\Yf'=bhY``][Ybn

? Øbgh`]WXY = hY``][Ybn']gh'XYfnY]h'Y]b'YbhgWXY]XYbXYf'HfY]VYf'XYf
7\]dVfUbWXYžY]bgWX`]Y»`]WX 'A]Wfcb"'8]Y'ghY][YbXY'BUWXZfU[Y
bUWX '7\]dg'ZØf'HYWX!HfYbXg'k]Y'? = 7'ci X'7ca di h]b['i bX
Ui hcbca Yg': U\fYb'gd]Y`h'Y]bY'[fc»Y'Fc``Y']a'[`cVU`Yb
7\]da Uf\_hz'XYfY]b'Jc`i aYb'jcb'ØVYf')\$\$'A]``]UfXYb'I G8'\Uh''
; YaÀ» '@mbI Vfc\_Yf'g]bX'7\]dg'ZØf'X]Y'aY]ghYb'hYWXbc`c[]gWXYb
9bhk]W\_`i b[Yb'i bYf`Àgg`]WXz'i bX'A]Wfcb'VYZ]bXYh'g]WX'\]Yf'[YbUi]a'f]WXh][Yb'Aca Ybh'Ui Z'XYf', VYf\c`gdif"

8]Y'DYfZcfa UbW'XYg'I bhYfbY\a Ybg']gh'a ]hh`Yfk Y]`Y'Ui W\'Y]b
9W\_dZY]`Yf'ZØf'XUg' \( \alpha\) hYfYggY'j cb' \( \alpha\) YghcfYb"'A ]Wfcb'\Uh']b'UW\\h
XYf'`YhnhYb'bYi b'Ei UfhU`Y'X]Y'9fk Ufhi b[Yb'ØVYfhfcZZYb"'8Ug'[]Vh
XYa 'DUd]Yf'5i Zk Àfhga ca Ybhi a 'i bX'nY][hž'XUgg'XUg
I bhYfbY\a Yb'[i h'[YfØghYh']ghž'i a ']a '\Ufhi a \_\Aa dZhYb'A Uf\_h
k Y]hYf'VYghY\Yb'ni '\_\ObbYb"

 $HY]^*XYf^*9fZc^*[g[YgWX]WXhY^*j]cb^*A]Wfcb^*]gh^*X]Y^*?ca^*dYhYbn^*]b\\ 6YfY]WXYb^*k]Y^*<][$\setminus !6UbXk]XhX^*AYacfm^*fk^6A^*Li^*bX^*8F^5A^!DfY]gY^*zX]Y^*Yb^hgWXY]XYbX^*ZØf^*XYb^*ni^_ØbZh][Yb^*9fZc^*[^*XYg^*I]bhYfbYXaYbg^*g]bX"^8cWX^*k]Y^*VY]^*j]Y^*Yb^*<U^*V^*Y]hYf!: ]faYb^*_ObbhY^*Yg^*Ui^WXF]g]_Yb^*Xi^*fWX^*aO[^*]WXY^*VYf_UdUn]hAhYb^*i^*bX^*DfY]g_Aa^*dZY[YVYb"^8YbbcWX^*]gh^*X]Y^*U^*[YaY]bY^*Gh]aai^b[^*dcg]h]j^*-^*b]WXh^*bi^*f^*ZØf^*X]Y^*[YgUa^*hY^*<U^*V^*Y]hYf]bXi^*ghf]Y^*z^*X]Y^*]bXyb^*YhnhYb^*JX^*fYb^*ghUf_Y^*; Yk]bbY^*Ub^*XYb^*6OfgYb^*j^*YfnY]WXbYhXUh''$ 

±bg[YgUa hinY][hig]WXžXUggiA]WfcbiHYWXbcic[miY]bigdUbbYbXYfGd]YiYfi]biXYfiK YihiXYfiGdY]WXYfdfcXi \_hYi]ghii bXi[i hiUi Z[YghYiih]ghži a ij cbini \_ØbZh][YbiHfYbXgidfcZ]h]Yfhini ik YfXYb"i8]Y \_ca a YbXYbiEi UfhUignU\iYbi\_ObbhYbiYbhgWXY]XYbXigY]bži a iX]Y9fk Ufhi b[YbiXYfi5biY[Yfini iYfZØiYbii bXiXUgiJYfhfUi Ybi]biX]Y5\_h]Yik Y]hYfini ighÀf\_Yb"

8 YhU]`g	
Cfh	I G5
EiY``Yb	• k k k "Uf]j U"XY
	• Z]bUbWY"mU∖cc"Wca
	<ul><li>k k k "`mbl Vfc_Yf"XY</li></ul>

6 Ygi W Yb G Y i bg Ui Z k ca , + "X Y