

# BYi VfUbXYbVi f[ 'YbhXYW\_Yb. '5`hghUXhž BUhi f i bX \_i `]bUf]gW\Y'; Y\Y]a h]ddg

9bhXYW\_Yb`G]Y`BYi VfUbXYbVi f[.`Jcb`XYf`5`hghUXh`ØVYf VYY]bXfi W\_YbXY`GhUXha Ui Yfb`V]g`ni '\_i `]bUf]gW\Yb ; Y\Y]a h]ddg` 'Yf`YVYb`G]Y`X]Y`J]Y`ZU`h`X]YgYf`W\Ufa UbhYb GhUXh°



K ]``\_ca a Yb']b'BYi VfUbXYbVi f[ žY]bYf'GhUXh']a '<YfnYb
A YW\_`YbVi f[!Jcfdca a Yfbgž'X]Y'a ]h']\fYa '\]ghcf]gW\Yb'7\Ufa Y
i bX'XYf'a U`Yf]gW\Yb'BUhi f'VY[Y]ghYfh''C Zh'U`g'XUg' Hcf'ni f
A YW\_`YbVi f[]gW\Yb'GYYbd`UhhY 'VYnY]W\bYhž'\Uh
BYi VfUbXYbVi f[ 'b]W\h'bi f'Y]bY'fY]W\Y'; YgW\]W\hY'ni 'V]YhYbž
gcbXYfb'Ui W\'Y]bY'`YVYbX][Y'?i `hi fgnYbY'i bX'Y]bY'J]Y`nU\``j cb
: fY]nY]ha Ò[`]W\\_Y]hYb'''9[U`ž'cV'Xi 'Y]b'; YgW\]W\hg`]YV\UVYf'V]ghž
XYf'X]Y'[i h'Yf\U`hYbY'5`hghUXh'Yf\_i bXYb'a ÒW\hYž'cXYf'Y]b
BUhi f`]YV\UVYfž'XYf'X]Y'GW\Òb\Y]h'XYf'i a `]Y[YbXYb'GYYb'i bX
K À`XYf'[Yb]Y» Yb'a ÒW\hY' 'BYi VfUbXYbVi f['\Uh'ZØf'YXYb'Yhk Ug
]a '; YdÀW\_''' \dangle X]YgYa '5fh]\_Y`'bY\a Yb'k ]f'X]W\'a ]h'Ui Z'Y]bY
9bhXYW\_i b[gfY]gY'Xi fW\'X]Y'VYghYb'GY\Ybgk ØfX][\_Y]hYb'i bX

# 9bhXYW\_i b[ 'XYf'5`hghUXh'j cb BYi VfUbXYbVi f[

BYi VfUbXYbVi f[žY]bY'W\Ufa UbhY'GhUXh']a 'BcfXcghYb
8 Yi hgW\'UbXgž']gh'VY\_Ubbh'ZØf']\fY'[i h'Yf\U`hYbY'5`hghUXhž'X]Y'a ]h
Y]bYa 'fY]W\Yb'\]ghcf]gW\Yb'9fVY'Ui Zk UfhYh"'9]b'GdUn]Yf[Ub[
Xi fW\'X]Y'GhfU\"Yb'XYf'5`hghUXh']gh'k]Y'Y]bY'FY]gY']b'X]Y
JYf[Ub[Yb\Y]hž'kc'X]Y'; YgW\]W\hYb'`\Ab[gh'jYf[Ub[YbYf'NY]hYb
Ub'YXYf'9W\_Y'ni 'Z]bXYb'g]bX"'8]Y'GhUXh'ki fXY']a '%' "'\\J\f\ibXYfh
[Y[f\DbXYh'i bX'Ybhk]\W\_Y\hY'g]W\'gW\bY``ni 'Y]bYa 'k]W\h][Yb
<UbXY`gnYbhfi a ']b'XYf'FY[]cb"'<Yi hY'\_\ObbYb'\6Ygi W\Yf'X]Y
\[VYffYghY'X]YgYf'[`cffY]W\Yb'JYf[Ub[Yb\Y]h'\Ui hbU\'Yf`YVYb"

9]b k Y]hYfYg'<][\`][\h'XYf'5`hghUXh']gh'XUg'BYi VfUbXYbVi f[YfFUh\Ui g"'8Ug'\]ghcf]gW\Y'; YVÀi XYž']a '5i ZhfU['XYf'GhUXh'j cb %, +&'V]g'%, +('YfVUi hž'VYgh]W\h'Xi fW\'gY]bY'dfÀW\h][YbYi [ch]gW\Y': UggUXY"'9]b'6Ygi W\'XYg'FUh\Ui gYg'`c\bh'g]W\'b]W\h bi f'k Y[Yb'XYf'VYY]bXfi \(\frac{W}{2}\)bxYb'5fW\]hY\_hi fž'gcbXYfb'Ui \(\frac{W}{2}\)kY[Yb'XYf'A\\O[`]\(\frac{W}{2}\)JY'XUa ]h'j YfVi bXYbY'GhUXh[YgW\]W\hY]bni hUi \(\frac{W}{2}\)b''\=\Dcfa Uh]j Y'GW\Ui hUZY`b'i bX': \(\Omega\)\fi b[Yb'[YVYbY]bYb'h]YZYb'9]bV']\(\frac{W}{2}\)JY'\]ghcf]gW\Yb'5V\\Ai ZY'XYf'GhUXh''

 $5V[YgY\Yb'] cb'X]YgYb'UfWX]hY\_hcb]gWXYb'<][\N^{[]} \hg'[]Vh'Yg']b XYf'5`hghUXh'nU\`fY]WXY'[Ya Øh`]WXY'7UZÅg'i bX'_`Y]bY'@ÀXYbž'X]YY]b`UXYbž'XUg'GhUXh`YVYb']b'j c``Yb'NØ[Yb'ni'[Yb]Y<math>^{*}$ Yb''<]Yf

\_ObbYb`G]Y`VY]`Y]bYf`HUggY`?UZZYY`YbhgdUbbYb`cXYf``c\_U`YGdYn]U`]hÀhYb`dfcV]YfYb"`8]Y`?i`]ggY`XYf`\]ghcf]gW\Yb; YVÀi XYV]YhYh`X]Y`dYfZY\_hY`5ha cgd\ÀfY`ZØf`Y]bY`5i gnY]hž'k À\fYbX`G]Y`X]Y9]b\Y]a]gW\Yb`VYcVUW\hYb"`6YgcbXYfg`YadZY\`YbgkYfh`]gh`YgžY]b`GhØW\_`BYi VfUbXYbVi f[Yf`HcfhY`ni `\_cghYbž`X]Y`Y]bY``c\_U`YGdYn]U`]hÀh`XUfghY``h"

8]Y'5`hghUXh'j cb'BYi VfUbXYbVi f[']gh'Ui W\'ZØf']\fY'?i bgh!'i bX?i hi fgnYbY'VY\_Ubbh''FY[Y`a À»]['Z]bXYb']b'XYf'GhUXh'nU\`fY]W\Y JYfUbghU`hi b[Yb'i bX'5i gghY``i b[Yb'ghUhhž'X]Y'XUg'\_fYUh]j Y DchYbn]U`'XYf'FY[]cb'nY][Yb'''JYfgW\]YXYbY'; U`Yf]Yb'i bX'5hY`]Yfg V]YhYb'X]Y'A Ò[`]W\\_Y]hž'nY]h[YbÒgg]gW\Y'?i bgh'ni 'YbhXYW\_Yb'i bX g]W\'a ]h'XYb'?Øbgh`Yfb'Ui gni hUi gW\Yb''

9]b'k i bXYfgW\\ObYf'Cfh']b'XYf'5`hghUXh']gh'XYf'A Uf\_hd`UhnžXYf'j cb\]ghcf]gW\\Yb'; YV\\Ai XYb'i a [YVYb']gh'' < ]Yf'[]Vh'Yg'b]W\\h'bi f fY[Y`a \\A`»]['ghUhhZ]bXYbXY'A \\Af\_hYž'Ui Z'XYbYb'Zf]gW\\Y'DfcXi\_hY i bX'?i bgh\\UbXk\Yf\_'j\Yf\_Ui \\Zh'k\YfXYb\Z'gcbXYfb'Ui \\X''j\]Y`Y \\A\\O[`]W\\_Y]hYb\Z'g]W\\ni \\Yb\ngdUbbYb'i bX'X]Y'5ha cgd\\\AfY'ni [Yb]Y\simple Yb''9g']gh'XYf'dYfZY\_hY'Cfh\Z'i a 'XUg'@YVYb']b\\BYi VfUbXYbVi f['ni 'VYcVUW\\hYb'i bX'X]Y'\ZfYi bX`]W\\Yb\\9]b\\Y]a ]g\\\Yb'\\_Yb\yb\ybni `YfbYb''

K Ybb'G]Y'X]Y'5`hghUXh'Yf\_i bXYbžgc``hYb'G]Y'i bVYX]b[h'Y]bYb6`]W\_'Ui Z'X]Y'GhUXha Ui Yf'i bX'X]Y'HcfY'k YfZYb"'8]YgYVYY]bXfi W\_YbXYb'6Ui k Yf\_Y'nYi [Yb'j cb'XYf'\]ghcf]gWXYb6YXYi hi b['i bX'XYf'ghfUhY[]gWXYb'@U[Y'XYf'GhUXh''8]Y'Y\YaU`][YGhUXha Ui Yf']gh'Ub'j ]Y`Yb'GhY``Yb'[i h'Yf\U`hYb'i bX'V]YhYh]bhYfYggUbhY'9]bV`]W\_Y']b'X]Y'XYZYbg]j Y'5fWX]hY\_hi f'XYgA]hHY`U`hYfg"

8]Y'9f\_i bXi b['XYf'5`hghUXh'j cb'BYi VfUbXYbVi f[']gh'Y]b
i bj Yf[Ygg`]W\Yg'9f`YVb]g'ZØf'U``Yž'X]Y'; YgW\]W\hYž'?i `hi f'i bX
; Ughfcbca ]Y'`]YVYb"'\*XYYf'GW\f]hh'Xi fW\'X]Y'a U`Yf]gW\Yb'GhfU»Yb
i bX'; UggYb']gh'Y]bY'9bhXYW\_i b[ž'X]Y'FY]gYbXY']b']\fYb'6Ubb
n]Y\h'i bX'g]Y'bYi [ ]Yf]['a UW\h'Ui Z'X]Y'; YgW\]W\hYbž'X]Y'X]YgY
W\Ufa UbhY'GhUXh'ni 'YfnÀ\`Yb'\Uh"

: Øf'k Y]hYfY' ⇒Zcfa Uh]cbYb'ØVYf'X]Y'5`hghUXh'i bX']\fY GY\Ybgk ØfX][\_Y]hYb'VYgi W\Yb'G]Y'X]Y'cZZ]n]Y``Y'K YVg]hY'j cb BYi VfUbXYbVi f[.'bYi VfUbXYbVi f["XY"

# 8]Y'VYY]bXfi W\_YbXYb'GhUXha Ui Yfb'i bX HcfY

8]Y'GhUXh'BYi VfUbXYbVi f[ž']a 'a U`Yf]gW\Yb'A YW\_`YbVi f[! J cfdca a Yfb'[Y`Y[Ybž']gh'YVYbgc'ZØf']\fY'ZUgn]b]YfYbXYb GhUXha Ui Yfb'k]Y'ZØf']\fY'\]ghcf]gW\Y'5`hghUXh'VY\_Ubbh''8]Y'[i h Yf\U`hYbYb'6YZYgh][i b[gUb`U[Ybž'X]Y'X]Y'5`hghUXh'i a [YVYbž [Y\ÒfYb'ni 'XYb'VYY]bXfi W\_YbXghYb'J YfhY]X][i b[gUb`U[Yb']b BcfXXYi hgW\`UbX'i bX'[YVYb'Y]b'Y]bXfi W\_gj c``Yg'6]`X'j cb'XYf; YgW\]W\hY'XYf'GhUXh''

8]Y GhUXha Ui Yfb k i fXYb ]a '%' "'\\f\i bXYfh YfVUi h i bX g]bX Y]b\YfUi gfU[YbXYg 6Y]gd]Y ``a ]hhY `U`hYf`]W\Yf 5fW\]hY\_hi f"'<]Yf g]bX\Y]b][Y '< Ui dha Yf\_a U`Yž X]Y `GhUXha Ui Yfb j cbBYi VfUbXYbVi f[ 'ni Y]bYa `Y]bn][Ufh][Yb '9f`YVb]g 'a UW\Yb. `

- ; YgUa h`Àb[Y.'8]Y'A Ui Yfb'i a gW\`]Y» Yb'Y]bY ; YgUa hZÀW\Y'j cb'Yhk U'' ž) '?]`ca YhYfb"
- 5 fWX ]hY\_hi fgh]`Y. '8 ]Y 'GhUXha Ui Yfb 'g]bX 'Y]b 'A ]I 'Ui g fca Ub]gWX Yb 'i bX '[ ch]gWX Yb '6Ui gh]`Yb"
- 8 Y hU]`fY]WX Y ': Yghi b[gUb`U[Yb. 'A Y\fYfY'HØfa Y'i bX 6 Ugh]cbYb'g]bX']b'XYb'A Ui Yfb']bhY[f]Yfh"

 $8 ] Y `A Ui Yfb `g] b X `b] W h `bi f `VYY] b X fi W_Y b X Y `6Ui k Yf_Y \check{z} `g c b X Y fb Ui W `NYi [ Yb `Y] b Y f `VYk Y [ h Yb `; Yg W ] W h Y " K Å \ f Y b X `X Y g A ] h h Y `U `h Y fg `X] Y b h Y b `g] Y `X Y a `G W i h n `X Y f `G h U X h 'j c f `ZY] b X `] W Y b <math display="block"> 5b[f] ZZY b \check{z} i b X `] \setminus f Y `a Ugg] j Y `G h fi _h i f `k Uf `Y] b `G ma V c ``X Y f `A U W h i b X `J Y fh Y ] X ] [ i b [ g V Y f Y] h g W U Z h " 6 Y g c b X Y fg `\ Y fj c f n i \ Y V Y b `g] b X X ] Y `j ] Y f `< Ui d h h c f Y \check{z} `X] Y `U `g `9] b [ Å b [ Y `n i f `G h U X h `X] Y b h Y b `i b X `j c b \ ] g h c f] g W Y f `6 Y X Y i h i b [ `g] b X "$ 

#### 8]Y'<UidhhcfYjcbBYiVfUbXYbVif[

8]Y'GhUXh'j YfZØ[hY'ØVYf'a Y\fYfY'HcfYž'jcb'XYbYb'j]Yf'VYgcbXYfg

a Uf\_Ubh'g]bX"'8]YgY'HcfY'g]bX'b]W\h'bi f'UfW\]hY\_hcb]gW\Y A Y]ghYfk Yf\_Yž'gcbXYfb'Ui W\'fYdfÀgYbhUh]j Y'Gma Vc`Y'XYf GhUXh[ YgW\]W\hY.'

Hcf	6Ui ⁄U\f	6YgcbXYf\Y]hYb
GhUf[UfXYf'Hcf	%' "`\\f\"	6Yg]hnh <sup>·</sup> Y]bY
		Y]bn][Ufh][Y <sup>-</sup> =bgW\f]Zh
		i bX <sup>·</sup> Y]b
		Y]bXfi W_gj c``Yg
		K UddYb"
BYighfY`]hnYf'Hcf	%' "`\\f\"	KifXY <sup>-</sup> ]a <sup>-</sup> %- "
		メJ\f\i bXYfh
		fYghUi f]Yfh/`\]Yf
		Z]bXYb <sup>·</sup> c Zh
		JYfUbghU`hi b[Yb
		ghUhh"
: ØfghYbVYf[Yf'Hcf	%(""\\f\" 6YgcbXYfY	
		; YghU`hi b[ˈa ]h
		GhfYVYdZY]`Yfb`ibX
		N]bbYb"
K c\bhcf	%) "`\\f\"	6Y\YfVYf[ h'\Yi hY
		Y]b'_`Y]bYg'AigYiaž
		XUg <sup>·</sup> X]Y
		GhUXh[YgWX]WXhY
		YfnÀ\`h"

%XYg'X]YgYf'HcfY'YfnÀ\`h'gY]bY'Y][YbY'; YgWk]Wk hY'i bX'V]YhYh
6Ygi Wk Yfb'X]Y'A Ò[`]Wk\_Y]hž']b'X]Y'J Yf[Ub[Yb\Y]h'Y]bni hUi Wk Yb"
8 Ug'GhUf[UfXYf'Hcf']gh'VYgcbXYfg'VY`]YVhž'Ui Z[fi bX'gY]bYf
]a dcgUbhYb'9fgWkY]bi b['i bX'XYf'A Ò[`]Wk\_Y]hž'j cb'Xcfh'Y]bYb
\Yff']Wk Yb'6`]W\_'ØVYf'X]Y'GhUXh'ni '[Yb]Y» Yb"'9g']gh'b]Wk h'bi f'Y]b
: chc! < chgd chž gcbXYfb'Ui Wk'Y]b'VY`]YVhYf'HfYZZdi b\_h'ZØf
9]b\Y]a ]gWkYi bX'Hci f]ghYb"'</pre>

9]b'GdUn]Yf[Ub['Ybh`Ub['XYf'GhUXha Ui Yfb']gh'Y]b'UVgc`i hYg'Ai gg ZØf'YXYb'6Ygi WXYf"'8]Y'[i h'Yf\U`hYbYb'Ghfi \_hi fYb'i bX'XYf'U`hY GhUXh\_Yfb'j Yf`Y]\Yb'XYf'GhUXh'Y]b'Y]ba U`][Yg': `U]f"'9g']gh'Ui WXY]bY'\Yfj cffU[YbXY'; Y`Y[Yb\Y]hž'X]Y'UhYa VYfUi VYbXY

@UbXgWXUZhifi bXii a iBYi VfUbXYbVi f[ ini i[ Yb]Y» Yb"iJ cbiXYb A Ui YfbiUi gi\Uhia UbiY]bYbigWX ObYbi6`]W\_iUi ZiX]Yii a i]Y[ YbXYb GYYbii bXiX]YiBUhi f"i

9]b'k Y]hYfYf'k ]Wkh][ Yf'Di b\_h'g]bX'X]Y': Ø\fi b[ Ybž'X]Y'cZh
Ub[ YVchYb'k YfXYb"'< ]ghcf]gWkY'GhUXhZØ\fYf'hY]'Yb
'Y]XYbgWk UZh`]Wk']\f'K ]ggYb'ØVYf'BYi VfUbXYbVi f['i bX'X]Y
VYY]bXfi W\_YbXYb'GhUXha Ui Yfb"'K À\fYbX'X]YgYf': Ø\fi b[ Yb
'YfbYb'6Ygi WkYf'b]Wkh'bi f'X]Y'; YgWk]WkhY'XYf'A Ui Yfbž'gcbXYfb
Ui Wk'gdUbbYbXY'; YgWk]WkhYb'ØVYf'X]Y'A YbgWkYbž'X]Y'\]Yf'[ Y`YVh\UVYb"'K Ybb'G]Y'X]Y'A Ô[`]Wk\_Y]h'\UVYbž'Ub'Y]bYf'gc`WkYb
: Ø\fi b['hY]`ni bY\a Ybž'gc``hYb'G]Y'X]Yg'i bVYX]b[ h'hi b"'

Ni gUa a YbZUggYbX``Aggh`g]W\`gU[Ybž`XUgg`X]Y`VYY]bXfi W\_YbXYbGhUXha UiYfb`ibX`HcfY`jcb`BYiVfUbXYbVif[`Y]b`nYbhfU`Yf6YghUbXhY]``XYg`GhUXhV]`XYg`g]bX"`G]Y`g]bX`b]W\h`bif[YgW\]W\hghf\AW\h][ž`gcbXYfb`UiW\`Y]b`UXYbX`ibX`nYi[Yb`jcb`XYfGW\\Ob\Y]hž`X]Y`X]YgY`GhUXh`ni`V]YhYb`\Uh"`KYf`BYiVfUbXYbVif[VYgiW\hž`gc``hY`g]W\`X]Y`;Y`Y[Yb\Y]h`b]W\h`Ybh[Y\Yb``UggYbž`X]YAUiYfb`ni`Yf\_ibXYb`ibX`X]Y`gh\AXh]gW\Y`;YgW\]W\hY`\UihbU\`niYf`YVYb"`

## BUhi f'dif.'8]Y'GWX Ob\Y]h'XYf'I a [YVib[

BYi VfUbXYbVi f[ ž·VY\_Ubbh·ZØf·gY]bY `\ ]ghcf]gW\Y `5`hghUXhi bX VYY]bXfi W\_YbXYb `GhUXha Ui Yfbž·V]YhYh·Ui W\ `Y]bY UhYa VYfUi VYbXY `bUhØf`]W\Y `I a [ YVi b[ ž·X]Y `Ygʻni `Yf\_i bXYb `[ ]`h" 8]Y `FY[ ]cb `i a `BYi VfUbXYbVi f[ ``cW\_h`a ]h`Y]bYf`J ]Y`ZU`h`Ub @UbXgW\UZhYbž·X]Y `j cb `gUbZhYb` < Ø[ Y`bž·K À`XYfb `i bX `[ `]hnYfbXYb GYYb `[ YdfÀ[ h`g]bX" `8]YgY `bUhØf`]W\Y `GW\Òb\Y]h`a UW\h`X]Y `GhUXh b]W\h'bi f`ni `Y]bYa `dYfZY\_hYb`N]Y``ZØf`; YgW\]W\hg]bhYfYgg]YfhYž gcbXYfb`Ui W\`ZØf`BUhi f`]YV\UVYfž`K UbXYfYf`i bX`C i hXccf! 9bh\i g]UghYb"

9]b`VY`]YVhYg`N]Y``ZØf`U``YžX]Y`X]Y`BUhi f``]YVYbž']gh`X]Y` **A** YW\_`YbVi f[ ]gWXY`GYYbd`UhhY"`5`g`[ fÒ» hYg ni gUa a Yb\Àb[ YbXYg`GYYb[ YV]Yh`8Yi hgWX`UbXg`]gh`g]Y`Y]b k U\fYg`DUfUX]Yg`ZØf`K UggYfgdcfh`Yf`i bX`9f\c`i b[ ggi WXYbXY"  $< ]Yf'Z]bXYb'G]Y'nU\ fY]WXY'A\ \grave{O}[\ `]WX_Y]hYb'ni\ a \ '?\ Ubi\ ZU\ fYbž \\ GY[\ Y`b'i\ bX'5b[\ Y`b'cXYf'Y]bZUWX'ni\ a \ '9bhgdUbbYb'Ua'l ZYf \\ Y]bYg'XYf'j\ ]Y`Yb'GYYb''$ 

8]Y'i a [YVYbXYb'K À`XYf``UXYb'Y]b'ni 'Ui g[YXY\bhYb K UbXYfi b[Yb'i bX'FUXhci fYb"'9g'[]Vh'a Y\fYfY'[i h Ui g[YgWX]`XYfhY'K UbXYfk Y[Yž'X]Y'Yg'\delabYb'Yfa Ò[`]WXYbž'X]Y : `cfU'i bX': Ui bU'XYf'FY[]cb'\Ui hbU\'ni 'Yf`YVYb"'6YgcbXYfg Ya dZY\`Ybgk Yfh'q]bX.

- 8 Y f `A Øf]hn! B Uh]c b U`d Uf\_. `9]b `C fh'j cb'i b V Y f Ø \ f h Y f B Uhi f ž X Y f '< Y ]a Uh'j ]Y `Y f 'g Y `h Y b Y f 'J c [ Y `Ufh Y b ']g h "
- 8 Yf'Hc``YbgYgYY.'⇒XYU`'ZØf'Y]bY'\_`Y]bY'K UbXYfi b['cXYf Y]b'D]W\_b]W\_'Ua 'K UggYf"
- 8 Y f 'B Uhi fd Uf\_ '5 a 'GhY hh]b Y f '< UZZ. '6]Y hY h'gd Y\_hU\_i 'À fY 5 i gV']W\_Y 'i b X 'Y]b Y 'UV k Y W g`i b [ gfY]W Y 'H]Y fk Y `h"

: Øf F UXZU\fYf []Vh Yg nU\ fY]W Y F UX k Y [Y Ž X]Y b]W h b i f X i f W K À XYf i b X K ]Yg Y b ZØ\fY b Ž g c b XYf b U i W Uh Ya VYf U i VYb XY 5 i g V ]W\_Y U i Z X]Y G Y Y b U b X g W UZh V]Yh Y b " F U X ZU\f Y b ] b X Y f I a [Y V i b [ ]gh b] W h b i f Y f Z f ]g W Y b X Ž g c b X Y f b U i W Y] b Y \ Y f j c f f U [Y b X Y A Ò [ ] W \_Y ] h Ž X]Y G W Ò b \ Y]h X Y f B Uh i f ] b j c ``Y b NØ [Y b n i [Y b] Y » Y b "

9]b'k Y]hYfYg'<][\`][\h']gh'X]Y'B Uhi fgW i hn[YV]Yh' N]Ya ]hnYf A ccf ž'Y]b'ZUgn]b]YfYbXYg'; YV]Yhž'XUg'ZØf'gY]bY'Y]bn][Ufh][Y : `cfU'i bX': Ui bU'VY\_Ubbh']gh'''<]Yf'\_Ubb'a Ub'Ui Z' < c`nghY[Yb Xi fW\'XUg'A ccf'k UbXYfb'i bX'X]Y'6YcVUW\hi b['j cb'J Ò[Y`b'k]fX ZØf'Cfb]h\c`c[Yb'ni a 'VYgcbXYfYb'JYf[bØ[Yb"

8]Y``c\_U`Yb`K UbXYf!'i bX`FUXj YfY]bY`V]YhYb`cZh`[YZØ\fhYHci fYb`Ubž'gcXUgg`G]Y`X]Y`FY[]cb`a ]h`Y]bYa `YfZU\fYbYb`; i]XYYf\_i bXYb`\_ObbYb"8]YgY`; i]XYg`\_ObbYb`gdUbbYbXY`; YgW\]W\hYb  $\emptyset$ VYf`X]Y`BUhi f`i bX`; YgW\]W\hY`XYf`; Y[YbX`YfnÀ\`Yb`i bX`\Y`ZYb\bYbž'j YfghYW\_hY`GW\Ob\Y]hYb`ni `YbhXYW\_Ybž'X]Y`G]Y`j]Y``Y]W\hU``Y]bY`ØVYfgY\Yb`k  $\emptyset$ fXYb"

I a `X]Y`BUhi fgW\\Ob\Y]hYb`bcW\`]bhYbg]j Yf`ni `Yf`YVYbž``c\bhrg]W\\Y]b`6Ygi W\`]b`XYf`K ]`XY`K Y]XYbžY]b`Y\Ya U`][Yf`5[fUfVYfY]W\\ŽXYf`\Yi hY`Xi fW\`@UbXgW\UZhgdZY[Y`ni a `bYi Yb`@YVYbgfUi a `ZØf\\\`fY]W\Y`H]YfUfhYb`[Yk\cfXYb`]gh" < ]Yf`\_ObbYb`G]Y`gY`hYbY\\\\\\\DZ`UbnYb`i\bX`H]YfY`VYcVUW\hYb`i\bX`g]W\`a ]h`XYf`Y]bn][Ufh][Yb\fY[]cbU`Yb`6]cX]j\Yfg]hÀh'j\YfhfUi\h'a\UW\Yb"

8]Y'A Ò[`]WX\_Y]hYb'ni f'9f\_i bXi b['XYf'BUhi f'fi bX'i a BYi VfUbXYbVi f['g]bX'bU\Yni 'i bVY[fYbnh"'9[U`ž'cV'G]Y'g]WX'ZØf Y]bYb'U\_h]j Yb'HU[']b'XYf'BUhi f'YbhgWXY]XYb'cXYf'Y]bZUWX'bi f k À\fYbX'Y]bYg'YbhgdUbbYbXYb'GdUn]Yf[Ub[g'X]Y'GYY'Y'VUi a Y`b `UggYb'a ÒWXhYb''X]Y'I a [YVi b['k]fX'G]Y'g]WXYf`]WX'j YfnUi VYfb"'

K Ybb'G]Y'a Y\f'ØVYf'X]Y'BUhi fgW\AhnY'i bX': fY]nY]ha Ò[`]W\\_Y]hYb fi bX'i a 'BYi VfUbXYbVi f['YfZU\fYb'a ÒW\hYbž'VYgi W\Yb'G]Y'X]Y cZZ]n]Y``Y'K YVg]hY'j cb'BYi VfUbXYbVi f['ZØf'U\_hi Y``Y

♣ Zcfa Uh]cbYb'i bX'H]ddg"

# ?i`]bUf]gW\Y'; Y\Y]a h]ddg']b BYi VfUbXYbVi f[

BYi VfUbXYbVi f[ 'a U[ 'ØVYfgW\Ui VUf'YfgW\Y]bYbž'UVYf'X]Y \_i `]bUf]gW\Y'GnYbY'\]Yf']gh'gc'j ]Y`ZÀ`h][ 'k ]Y'X]Y'GhUXh'gY`Vgh"'5i Z XYb'YfghYb'6`]W\_'\_ÒbbhY'a Ub'XYb\_Ybž'XUgg'X]Y'FYghUi fUbhg'i bX 7UZÅg']b'Y]bYf'\_\_`Y]bYb'GhUXh'k ]Y'X]YgYf'b]W\h'j ]Y`'ni 'V]YhYb\UVYb"'8cW\'a ]h'Y]b'k Yb][ '9f\_i bXi b[ '\_ca a h'a Ub'gW\bY``'Ui Z XYb'; YgW\a UW\_' i bX'XUg']a 'k U\fghYb'G]bbY'XYg'K cfhYg'' < ]Yfg]bX'Y]b][ Y'; Y\Y]a h]ddgž'X]Y'G]Y'k À\fYbX'\\hig'5i ZYbh\U`hg']b BYi VfUbXYbVi f[ 'i bVYX]b[ h'Ui gdfcV]YfYb'gc``hYb"

 $9] b Y `XYf `[fO) `hYb `GhAf_Yb `XYf `BYi VfUbXYbVi f[Yf ??@WXY `]gh `X]Y$ 

JYfk YbXi b[ 'j cb'fY[]cbU`Yb'i bX'gU]gcbU`Yb'Ni hUhYb"'J]Y`Y

FYghUi fUbhg`\UVYb'g]W\'XYa 'BUW\\U`h][ \_Y]hg[ YXUb\_Yb

j YfgW\f]YVYb'i bX'VYn]Y\Yb']\fY'DfcXi \_hY'j cb'Òfh`]W\Yb'6Ui Yfb"

8 Ug'j Yf`Y]\h'b]W\h'bi f'XYb'GdY]gYb'Y]bYb'VYgcbXYfg'Zf]gW\Yb

; YgW\a UW\_ž'gcbXYfb'i bhYfghØhnh'Ui W\'X]Y'`c\_U`Y'K ]fhgW\UZh" < ]Yf

q]bX'Y]b][ Y'C fhYž'X]Y'G]Y'b]W\h'j YfdUggYb'gc``hYb.

- F YghUi fUbh'Ua 'GhUXhd Uf\_' '6Y\_Ubbh'ZØf'gY]bY
   \Yfn\UZhYb'; Yf]W\hYž'X]Y'a ]h'Zf]gW\Yb'DfcXi \_hYb'Ui g'XYf
   I a [YVi b['ni VYfY]hYh'k YfXYb"'DfcV]YfYb'G]Y'i bVYX]b[h
   X]Y'U'hY'dca a YfgW\Y'? UfhcZZY`gi ddY°
- : ]gWX Yfg': f]hn' '9]b'\_`Y]bYgž'\Y]a Y`][ Yg'FYghUi fUbhž'XUg g]WX'Ui Z'fY[]cbU`Y': ]gWX[Yf]WXhY'gdYn]U`]g]Yfh'\Uh"'8]Y 5b[`Yfd`UhhY']gh'Y]b'Ai gg°
- 7 UZÅ 'Ua 'A Uf\_h' '8 Yf'dYfZY\_hY'C fh'ZØf'Y]bY
   k c\`j YfX]YbhY'? UZZYYdUi gY"' < ]Yf'[ ]Vh'Yg'\_Ògh`]WXY'HcfhYbž</li>
   X]Y'bUWX'hfUX]h]cbY``Yb'FYnYdhYb'[ YVUW\_Yb'k YfXYb"
- @U'D]nnYhhU'': Øf'@]YV\UVYf'XYf']hU`]Yb]gW\Yb'? ØW\Y.'8]Y D]nnYb'g]bX'XØbb'i bX'\_bi gdf][ž'i bX'X]Y'Ni hUhYb'g]bX U``YgUa h'j cb'\c\Yf'Ei U`]hÀh"

## 6YgcbXYfY GdYn]U`]hAhYb XYf FY[]cb

BYi VfUbXYbVi f[ '\Uh'Y]b][ Y'\_i `]bUf]gW\Y'HfUX]h]cbYbž'X]Y'Yg'k Yfh g]bXž'YbhXYW\_h'ni 'k YfXYb"'6Ygi W\Yb'G]Y'X]Y'Òfh`]W\Yb'A Àf\_hY cXYf'; Ughfcbca ]Ybž'i a 'X]Y'Zc`[ YbXYb'GdYn]U`]hÀhYb'ni '\_cghYb.

- A YW\_`YbVi f[ Yf'l bg]W hVUfYf' '9]b'gUZh][ Yf < YZY\_i WXYbž'XYf'a Y]gh'a ]h'Y]bYf': Ø``i b[ 'Ui g'Ei Uf\_'cXYf YdZY`b'qYfj ]Yfh'k ]fX"
- ; fcd]i g :: ]gWX Y : '9]bY 'GdY]gYž'X]Y 'bUWX 'XYa '6Yf`]bYf 5fWX]hY\_hYb'K U`hYf'; fcd]i g'VYbUbbh']gh'i bX'j cf'U``Ya ']b XYf'FY[]cb'VY\_Ubbh']gh'i
- K ]`X[Yf]WX hY` '=b'XYb'K À`XYfb'i a 'BYi VfUbXYbVi f[k ÀWXgh'j]Y`K]`Xž'i bX'X]Y``c\_U`Y'?ØWXY'bi hnh'X]Yg'ZØfgWXa UW\_\UZhY'; Yf]WXhY"

A Uf\_hVi a a Y`b i bX : Y]bgW\a YW\_Yf!9j Ybhg

K Ybb'G]Y'X]Y'5ha cgd\ÀfY'XYf'GhUXh'Yf'YVYb'a ÒW\hYbž'VYgi W\YbG]Y'Y]bYb'XYf'Òfh']W\Yb'A Àf\_hY'''<]Yf'\_ÒbbYb'G]Y'b]W\h'bi f'Zf]gW\Y
DfcXi \_hY'\_Ui ZYbž'gcbXYfb'Ui W\'a ]h'XYb'9]b\Y]a ]gW\Yb']bg
; YgdfÀW\'\_ca a Yb'i bX'X]Y'\_i `]bUf]gW\Yb'; Y\Y]a h]ddg'YfZU\fYb''
8Yf'K cW\Yba Uf\_h']b'XYf'5`hghUXh']gh'Y]b'`YV\UZhYg'NYbhfi a 'ZØf
U``Yž'X]Y'[YfbY'\_cW\Yb'cXYf'X]Y'\_Ògh`]W\Yb'fY[]cbU`Yb'DfcXi \_hY
dfcV]YfYb'a ÒW\hYb''

9]b'<][\`][\h'g]bX'Ui W\`X]Y'j YfgW\]YXYbYb': Y]bgW\a YW\_Yf!
9j Ybhgž'X]Y'XUg'[UbnY'\\h'f\ØVYf']b'BYi VfUbXYbVi f['ghUhhZ]bXYb"
JYfUbghU`hi b[Yb'k]Y'XUg'A YW\_`YbVi f[Yf'GhfYYh': ccX': Ygh]j U`cXYf'X]Y'BYi VfUbXYbVi f[Yf'GW\`Ya a Yfk cW\Yb'V]YhYb'hc``YA Ò[`]W\\_Y]hYbž'X]Y'J]Y`ZU`h'XYf'FY[]cb'ni 'YbhXYW\_Ybž'j cb'Y]bYa\_fYUh]j Yb'Ni gUa a Ybgd]Y```c\_U`Yf'?cW\\_i bgh'V]g'\]b'ni
hfUX]h]cbY``Yb'; Yf]W\hYb"

### H]ddg ZØf XYb dYfZY\_hYb FYghUi fUbhVYgi W

9]b'dUUf'<]bk Y]gYžX]Y'≒fYb'FYghUi fUbhVYgi W\'bcW\ Ub[YbY\a Yf'a UW\Yb'\_ÒbbYb.

- FYgYfj ]YfYb. '6YgcbXYfg'Ub'XYb'K cWXYbYbXYb'\_Ubb'Yg ]b'XYb'VY`]YVhYb'@c\_U`Yb'\_bUW\_]['j c```k YfXYb"'9]bY FYgYfj ]Yfi b['g]WXYfh'\(\Rightarrow\) bYb'Y]bYb'H]gWX"
- : fU[Yb'G]Y'bUW\'9a dZY\`ib[Yb.'8Ug'DYfgcbU`\_Ybbhg]W\'a Y]gh'gY\f'[ih'Uig'ibX'\_Ubb'\=\bYb'Y]b][Y']\fYf@]YV`]b[g[Yf]W\hY'Ya dZY\`Yb"
- DfcV]YfYb i bX 'HY] `Yb. 'J]Y `Y FYghUi fUbhg 'V]YhYb '\_ `Y]bY
   Dcfh]cbYb 'cXYf 'HUdUg 'Ub" 'DYfZY\_hži a 'j YfgWX]YXYbY
   ; YgWXa ÀW\_Yf 'ni 'YbhXYW\_Yb 'i bX 'ni 'hY] `Yb\*

## 9bhgdUbbhYg; Ughfc!5a V]YbhY

9]b'k Y]hYfYg'A Yf\_a U`'j ]Y`Yf'@c\_U`Y']b'BYi VfUbXYbVi f[']gh'XUg YbhgdUbbhY'5a V]YbhY"'9[U`ž'cV'G]Y'Y]b'Y]bZUWXYg'7UZÅ'cXYf'Y]b [Y\cVYbYg'FYghUi fUbh'k À\`Ybž'X]Y'9]b\Y]a ]gWXYb'ZfYi Yb'g]W ]a a Yf'ØVYf'bYi Y'; ÀghY'i bX'V]YhYb'\\bYb'Y]b'\Yfn`]WXYg K ]``\_ca a Yb"'; Yb]Y\\Yb'G]Y'X]Y'; UghZfYi bXgWXUZhž'k À\fYbX'G]Y

## : Un]h. '9]b ; Ybi gg ZØf U``Y G]bbY

 $8 ]Y'_i `]bUf]gWXY'@UbXgWXUZh'BYi VfUbXYbVi f[g']gh'a Y\f'U`g'bi f Y]b'; Y\Y]a h]dd' 'g]Y']gh'Y]b'YWXhYg'5VYbhYi Yf'ZØf'XYb'; Ui a Yb'' Jcb'\Yfn\UZhYb'< Ui ga Ubbg_cgh'ØVYf']bhYfbUh]cbU`Y GdYn]U`]hÀhYb'V]g'\]b'ni 'gØ» Yb'BUgWXYfY]Ybž']b'X]YgYf'GhUXh k YfXYb': Y]bgWXa YW_Yf'ZØbX]['''5`gcž'dUW_Yb'G]Y'\Rightarrow fYb'5ddYh]h'Y]b i bX'a UWXYb'G]Y'g]WX'Ui Zž'i a 'X]Y'_i `]bUf]gWXYb'GWXÀhnY BYi VfUbXYbVi f[g'ni 'YbhXYW_Yb'$ 

# J YfUbghU`hi b[ Yb'i bX': Ygh]j U`g. '9]b'6`]W\_ Ui Z'XUg'`c\_U`Y'@YVYb

BYi VfUbXYbVi f[ žcZh'U`g'XUg' JYbYX][ 'XYg'BcfXYbg 'VYnY]W\bYhž ]gh'b]W\h'bi f'ZØf'gY]bY'VYY]bXfi W\_YbXY'5fW\]hY\_hi f'i bX'X]Y
a U`Yf]gW\Y'5`hghUXh'VY\_Ubbhž'gcbXYfb'Ui W\'ZØf'gY]bY'`YVYbX][ Y
9j YbhgnYbY"'8Ug'[ YgUa hY'\\\\\\f'\ØVYf'Z]bXYb']b'XYf'GhUXh
nU\`fY]W\Y'JYfUbghU`hi b[ Yb'i bX': Ygh]j U`g'ghUhhž'X]Y'XUg'`c\_U`Y
@YVYb'k ]XYfgd]Y[ Y`b'i bX'gck c\``9]b\Y]a ]gW\Y'U`g'Ui W\
6Ygi W\Yf'Ub`cW\_Yb"

9]bYg'XYf'<][\`][\hg']gh'XUg'BYiVfUbXYbVif[Yf'GhUXhZYghž'XUg'À\f`]W\]a 'Gca a Yf'[YZY]Yfh'k]fX"'9g'n]Y\h'Y]bY'J]Y`nU\`'j cb A YbgW\Yb'Ubž'X]Y'g]W\]a 'GhUXhdUf\_'i bX'fi bX'i a 'XYb'A Uf\_hd`Uhn j YfgUa a Y`bž'i a 'XUg'Vi bhY'HfY]VYb'ni '[Yb]Y»Yb"'Jcb'@jY!A i g]\_ ØVYf'A Uf\_hghÀbXY'a ]h'fY[]cbU'Yb'DfcXi \_hYb'V]g'\]b'ni K Yhh\_Àa dZYb']b'j YfgW\]YXYbYb'8]gn]d`]bYb''\]Yf']gh'ZØf''YXYb Yhk Ug'XUVY]"'8]Y'Gh]a a i b[']gh'ghYhg'ZfÒ\`]W\ž'i bX'X]Y'GhfU»Yb q]bX'[YqW\a ØW\_h'a]h'Vi bhYb': U\bYb'i bX'@]W\hYfb"

9]b'k Y]hYfYg'VYa Yf\_Ybgk YfhYg'9fY][ b]g']gh'XYf' BYi VfUbXYbVi f[Yf'K Y]\bUW\hga Uf\_h"'8]Y'GhUXh'j Yfk UbXY\h g]W\']b'Y]b'K ]bhYfk i bXYf\UbX\z'a ]h'ZYgh\]W\'[YgW\a \@W\_hYb'6i XYb\z' X]Y'\UbX[YZYfh][ hY'; YgW\Yb\_Y\z'; \@\k Y]b'i bX'fY[ ]cbU\Y ? \Ogh\]W\\_Y]hYb'UbV]YhYb"'8Yf'8i Zh'j cb'N]a h'i bX'[Yf\OghYhYb A UbXY\b'\]Y[ h']b'XYf'@ Zh\z'k \A\fYbX'K Y]\bUW\hga Y\cX]Yb'X]Y A Yb[Y'YfZfYi Yb"'8]YgY'NY]h'Vf]b[h'Y]bY'a U[]gW\Y'5ha cgd\AfY']bX]Y'GhUXhž'X]Y'a Ub'g]W\'b]W\h'Ybh[Y\Yb'`UggYb'gc``hY"

8]Y:]`a bÀW hY BYi VfUbXYbVi f[ 'g]bX'Y]b'k Y]hYfYg'<][\`][\hž VY]:XYa '`c\_U`Y'i bX']bhYfbUh]cbU`Y':]`a Y']b'Y]bYf'Y]bn][ Ufh][ Yb?i`]ggY'dfÀgYbh]Yfh'k YfXYb"' \(\delta\) XYb'k Ufa Yb'Gca a Yfa cbUhYbZ]bXYb'CdYb!5]f!JcfZØ\fi b[ Yb'Ui Z'[ fc» Yb'@Y]bk ÀbXYb'ghUhhž'i bXX]Y'6Ygi WXYf'\_ObbYb'i bhYf'XYa 'GhYfbYb\]a a Y`'D`Uhn'bY\a Ybžk À\fYbX'g]Y']\fY'@]YV`]b[ gZ]`a Y'[ Yb]Y» Yb"'8Ug'9j Ybh'ZOfXYfhb]Wh'bi f'X]Y'?i `hi fž'gcbXYfb'Ui WX'XUg'; Ya Y]bgWXUZhg[ YZØ\`"

: Øf'Aig]\_`]YV\UVYf']gh'XUg'BYiVfUbXYbVif[Yf'Aig]\_ZYgh'Y]b
Aigg" < ]Yf'hfYhYb'? Øbgh`Yf'Uig'jYfgWX]YXYbYb'; YbfYg'UiZž'ibX
X]Y'GhUXh'k]fX'nia 'gWkk]b[YbXYb'< Yfn'XYf'Aig]\_"'Jcb
\_`Ugg]gWXYf'Aig]\_'V]g'\]b'ni'a cXYfbYb'? `Àb[Yb']gh'U``Yg'XUVY]"
8]Y'5iZZØ\fib[Yb'Z]bXYb'Ub'jYfgWX]YXYbYb'CfhYb']b'XYf'GhUXh
ghUhhž'XUfibhYf'?]fWXYbž'DUf\_g'ibX'XUg'@UbXYgh\YUhYfž'ibX'V]YhYb
Y]bY'\YfjcffU[YbXY';Y`Y[Yb\Y]hž'X]Y'aig]\_U`]gWXY'J]Y`ZU`h'XYf
FY[]cb'ni'YbhXYWYb"

9]b 'gdUbbYbXYg'9j Ybhž'XUg']a a Yf'a Y\f'Dcdi `Uf]hÀh'Yf`Ub[hž']gh XUg': Ygh'XYf'?i `hi fYb"'8]YgYg': Ygh]j U`'ZY]Yfh'X]Y'\_i `hi fY``Y J]Y`ZU`h'XYf'GhUXh'i bX'Vf]b[h'A YbgW\Yb'i bhYfgW\]YX`]W\Yf < Yf\_i bZh'ni gUa a Yb"'9g'V]YhYh'Y]bY'D`UhhZcfa 'ZØf'`c\_U`Y'?Øbgh`Yf i bX'; fi ddYbž']\fY'HfUX]h]cbYbž'HÀbnY'i bX'A i g]\_'ni 'dfÀgYbh]YfYb" 6Ygi W\Yf'\_ObbYb'Ui W\'j YfgW\]YXYbY'; Yf]W\hY'Ui g'U``Yf'K Y`h \_cghYb'i bX'Ub'K cf\_g\cdg'hY]`bY\a Ybž'i a 'a Y\f'ØVYf j YfgW\]YXYbY'?i `hi fYb'ni 'YfZU\fYb"

9]bY'VYgcbXYfY'JYfUbghU'hi b[ž'X]Y'X]Y'BUhi f'i bX'X]Y'GW\Òb\Y]h
XYf'I a [YVi b['j cb'BYi VfUbXYbVi f[']b'XYb': c\_i g'ghY``hž']gh'XYf'
FUX!'i bX'K UbXYfhU["'5b'X]YgYa 'HU['k YfXYb'nU\`fY]W\Y
[YZØ\fhY'Hci fYb'Ub[YVchYbž'VY]'XYbYb'HY]`bY\a Yf'X]Y
UhYa VYfUi VYbXYb'@UbXgW\UZhYb'fi bX'i a 'BYi VfUbXYbVi f[
Yf\_i bXYb'\_\ObbYb''8]Y'JYfUbghU`hi b['VYhcbh'X]Y'6YXYi hi b['j cb
5\_h]j ]h\hi bX'; Ygi bX\Y]hi bX'`\\AXh'XUni 'Y]bž'X]Y'BUhi f'Ui Z
[Ya Y]bgW\UZh`]W\Y'K Y]qY'ni '[Yb]Y\"Yb"

: Ygh]j U`h]hY`	AcbUh	<ui ]hàhyb<="" dhu_h]j="" th=""></ui>	
GhUX hZY gh	; `]	@j Y!A i g]_ž	
		AUf_hghÀbXYž	
		K Yhh_Àa dZY	
K Y]\bUW\hga Uf_h	8YnYa VYf	?i bgh\UbXk Yf_ž	
		; `Ø\kY]bž'Aig]_	
:]`a bÀW\hY	Gca a Yf	CdYb!5]f!: ]`a Yž	
		?i`hif	
Aig]_ZYgh	5i [igh	?cbnYfhYž	
		j YfgWX]YXYbY	
		Aig]_f]W\hib[Yb	
: Ygh XYf ?i `hi fYb	GYdhYa VYf	?i`hifY``Y	
		8UfV]Yhib[Ybž	
		_i `]bUf]gW\Y	
		; YbØggY	
FUX!'i bX'K UbXYfhU[	A U]	; YZØ\fhY'HcifYbž	
		BUhi fYf`YVb]g	

8]Y'JYfUbghU`hi b[Yb']b'BYi VfUbXYbVi f['g]bX'b]Wh'bi f
[YgY``gW\UZh`]W\Y'<][\`][\hgž'gcbXYfb'Ui W\'Y]bY'[fc>Ufh][Y
A O[`]W\\_Y]hž'X]Y'?i `hi fž'X]Y'A YbgW\Yb'i bX'X]Y'HfUX]h]cbYb'X]YgYf
W\Ufa UbhYb'GhUXh'\_YbbYbni `YfbYb"'K Yf'BYi VfUbXYbVi f[
VYgi W\hž'gc``hY'g]W\'X]Y'; Y`Y[Yb\Y]h'b]W\h'Ybh[Y\Yb'`UggYbž'Ub
Y]bYa 'XYf'j ]Y`Yb': Ygh]j U`g'hY]`ni bY\a Yb'i bX'X]Y'\Yfn`]W\Y
; UghZfYi bXgW\UZh'XYf'9]b\Y]a ]gW\Yb'ni 'Yf`YVYb"'

: Øf`bÀ\YfY` ⇒ Zcfa Uh]cbYb`ni 'VYj cfghY\YbXYb`9j Ybhg`Ya dZ]Y\`h g]W\`Y]b`6`]W\_`Ui Z'X]Y`cZZ]n]Y``Y`K YVgY]hY`XYf`GhUXh BYi VfUbXYbVi f[.'k k k "bYi VfUbXYbVi f[ "XY"

# H]ddg'ZØf'Y]bYb'i bj Yf[ Ygg`]W\Yb'5i ZYbh\U`h ]b'XYf'FY[ ]cb

9]b '6Ygi W. ']b 'BYi VfUbXYbVi f[ ']gh'a Y\f'U`g'bi f'Y]b 'Y]ba U`][ Yf Ghcdd/'Yg']gh'Y]bY'; Y`Y[ Yb\Y]hž']b 'X]Y'; YgW\]W\hY'i bX'?i `hi f X]YgYf'W\Ufa UbhYb 'GhUXh'Y]bni hUi W\Yb'i bX'X]Y'a U`Yf]gW\Y I a [ YVi b[ 'ni '[ Yb]YYb"' < ]Yf'g]bX'Y]b][ Y'H]ddgž'X]Y'AbYb'\Y`ZYb k YfXYbž'AfYb'5i ZYbh\U`h'i bj Yf[ Ygg`]W\'ni 'a UW\Yb"

- \*U\ fYgnY]h'VYfØW\_g]WX h][Yb. '8]Y'K U\``XYf'FY]gYnY]h
  \_Ubb'=\fYb'5i ZYbh\U`h'Yf\YV`]WX'VYY]bZi ggYb"'=a ': fØ\`]b[
  i bX'Gca a Yf'V`Ø\Yb'X]Y'; ÀfhYb'i bX'DUf\_gž'k À\fYbX'XYf
  < YfVgh'a ]h'gY]bYb'Vi bhYb'6`ÀhhYfb'Y]bY'[Ubn'Y][YbY
  5ha cgd\ÀfY'gWXUZZh"'=a 'K]bhYf'\_ObbYb'G]Y'X]Y'GhUXh']b
  Y]bYf'nUi VYf\UZhYb'GWXbYY`UbXgWXUZh'Yf`YVYb"</p>
- 2 ZZY b h`]WX Y f`J Y f\_Y\f. 'Bi hnYb'G]Y'X]Y'[i h'Ui g[YVUi hYb OZZYbh`]WX Y b'J Y f\_Y\fga ]hhY`ž'i a 'X]Y'l a [YVi b['ni Y f\_i b X Y b"'6i ggY'j Y f V]b X Y b'B Y i V f Ub X Y b V i f['a]h'X Y b i a`]Y [Y b X Y b'GhÀXhYb'i b X'GY\Y b gk Ø f X][\_Y]hYb"
- @c\_U`Y': Ø\fi b[Yb.'N]Y\Yb'G]Y']b'6YhfUW\hž'Ub'Y]bYf
  [YZØ\fhYb'Hcif'hY]`ni bY\a Yb"'8]Yg'[]Vh'=\bYb'b]W\h'bif
  h]YZYfY'9]bV`]W\_Y']b'X]Y'?i`hif'i bX'; YgW\]W\hYž'gcbXYfb
  i bhYfghØhnh'Ui W\`c\_U`Y'I bhYfbY\a Yf"

I a `X]Y`\_i`]bUf]gW\Yb`; Y\Y]a b]ggY`XYf`FY[]cb`ni `YbhXYW\_Ybž gc``hYb`G]Y``c\_U`Y`A Àf\_hY`i bX`: YghgÀ`Y`VYgi W\Yb"`<]Yf`\_ÒbbYb`G]Y b]W\h'bi f`fY[]cbU`Y`GdY]gYb`dfcV]YfYbž'gcbXYfb`Ui W\`X]Y 5ha cgd\ÀfY`XYf`GhUXh`\Ui hbU\`Yf`YVYb"

### I bhYf\_i bZh`]b BYi VfUbXYbVi f[

8]Y'K U\`'XYf'f]W\h][Yb'I bhYf\_i bZh'\_Ubb'\\\ fYb'5i ZYbh\U`h Yf\YV`]W\'VYY]bZi ggYb"'BYi VfUbXYbVi f['V]YhYh'j YfgW\]YXYbY Cdh]cbYbž'j cb'W\Ufa UbhYb'DYbg]cbYb'ØVYf'a cXYfbY'<chY`g'V]g \]b'ni '[Ya Øh`]W\Yb': Yf]Ybk c\bi b[Yb"'<]Yf'g]bX'Y]b][Y Ya dZY\`Ybgk YfhY'I bhYf\_ØbZhY.

lbhYf_ibZh	5fh	6YgcbXYf\Y]hY	DfY]g_`UggY
		b	
< c hY`	< c hY`	9`Y[UbhY	
GWX`cgg[UfhYb		N]a a Yfž	
		FYghUi fUbh	
DYbg]cb	DYbg]cb	: Ua ]`]Yb[ YZØ\f	
9VYf\UfXh		hž <sup>·</sup> [Ya Øh`]W\	
: Yf]Ybk c\bi b[	:Yf]Ybkc\bib[	GY`Vghj Yfgcf[i	
GhUXhV`]W_		b[žnYbhfU`	
		[Y`Y[Yb	

9]b'k Y]hYfYf'k ]WXh][Yf'5gdY\_h'ZØf'Y]bYb'[Y'i b[YbYb'5i ZYbh\U`h]gh'X]Y'9ggYbd`Ubi b["'DfcV]YfYb'G]Y'X]Y'fY[]cbU`Y'?ØWXYž'X]Y'j cbZf]gWXYbž'gU]gcbU`Yb'Ni hUhYb'[YdfÀ[h']gh''6Ygi WXYb'G]Y'Y]b'dUUfXYf'`c\_U`Yb'FYghUi fUbhgž'X]Y'hfUX]h]cbY``Y'; Yf]WXhY'XYfa YW\_`YbVi f[]qWXYb'?ØWXY'UbV]YhYb"'

#### 5\_h]j 'gY]b

B Uhi fj YfVi bXYbY'FY]gYbXY'gc``hYb'X]Y'A Ò[`]W\\_Y]h'bi hnYbž'X]Y k i bXYfgW\ÒbY'l a [YVi b['BYi VfUbXYbVi f[g'ni 'Yf\_i bXYb"'FUX! i bX'K UbXYfk Y[Y'Xi fW\n]Y\Yb'X]Y'FY[]cb'i bX'V]YhYb gdY\_hU\_i `ÀfY'5i gV`]W\_Y'Ui Z'X]Y'GYYb'i bX'K À`XYf"'<]Yf'g]bX'Y]b][YVY`]YVhY'5\_h]j ]hÀhYb.

- K UbXYfi b[Yb.'8Yf'Hc``YbgYgYY']gh'dYfZY\_h'ZØf
  [Ya Øh`]WXY'GdUn]Yf[Àb[Y'cXYf'Yhk Ug'gdcfh`]WXYfY
  K UbXYfi b[Yb"'8]Y'l ZYfk Y[Y'`UXYb'ni 'Ui g[YXY\bhYb
  9f\_i bXi b[Yb'Y]b"
- : U\ffUXhci fYb. 'A ]YhYb 'G]Y 'Y]b :: U\ffUX 'i bX 'VY[ YVYb G]Y 'g]W\ 'Ui Z'X]Y 'nU\`fY]W\Yb 'F UXk Y[ Y" '8 ]Y 'F UXfci hYb ZØ\fYb 'G]Y 'Xi fW\ 'XUg 'k i bXYfgW\ ObY 'I a `UbX 'i bX 'Ub j YfgW\]YXYbYb 'GY\Ybgk ØfX][ \_Y]hYb 'j cfVY]"
- 6cchgZU\fhYb.; Yb]Y»Yb'G]Y'Y]bY'YbhgdUbbYbXY
   6cchgZU\fh'Ui Z'XYa 'Hc``YbgYgYY"'8]Yg']gh'Y]bY
   \Yfj cffU[YbXY'A O[`]WX\_Y]hz'X]Y'BUhi f'Ui g'Y]bYf'UbXYfYb
   DYfgdY\_h]j Y'ni 'gY\Yb"

8]Y'GhUXh'\Uh'Ui W\'Y]b'fY]W\\U'h][Yg'\_i `hi fY``Yg'5b[YVch", VYfdfØZYb'G]Y'XYb'JYfUbghU`hi b[g\_U`YbXYfž'i a 'ni 'gY\Ybž'cVkÀ\fYbX'\Rightarrow\fYg'6Ygi W\g'`c\_U`Y': YghYž'A i gYYb'cXYf?i bghUi gghY``i b[Yb'ghUhhZ]bXYb"

## 8]Y A YbgW Yb \_YbbYb`YfbYb

9]b 5i ZYbh\U`h`]b BYi VfUbXYbVi f[ 'k ]fX 'bcW\ 'gW\ ObYfž'k Ybb 'G]Y a ]h'XYb '9]b\Y]a ]gW\Yb ']bg'; YgdfÀW\ '\_ca a Yb"'8]Y 'A YbgW\Yb\]Yf'g]bX 'ZfYi bX`]W\ i bX 'cZZYb i bX 'ZfYi Yb 'g]W\ž']\fY 'GhUXh'i bX]\fY 'H]ddg'a ]h'\Left\bYb 'ni 'hY]'Yb"'6Ygi W\Yb 'G]Y '`c\_U`Y '7 UZ\\\gammag'cXYf

?bY]dYbži a ']b''cW\_YfYf'5ha cgd\AfY']bg'; YgdfAW\'ni '\_ca a Yb"

8 Y hU]`(

6Ygi WXYb G]Y i bg Ui Z Y]bY!fY]gY "XY