

## 9!GWcchYf!I bZU```]b A cUV]h.: U\fYf gWk Yf'j Yf`Yhnh'bUWX '? c``]g]cb

9]b'9!GWcchYfZU\fYf'kifXY'VY]'Y]bYa'I bZU```]b'AcUV]h j Yf`Yhnh"'8Yf'&\*! $\lambda$ \f][Y'\_c``]X]YfhY'a ]h'Y]bYa'5i hc'i bX a i gghY']bg'?fUb\_Yb\Ui g"'5\_hi Y``Y'9fa ]hh'i b[Yb'`Ui ZYb"



±0.6Yf`]bž'[YbUiYf'[YgU[h']a 'GhUXhhY]`'AcUV]hž'YfY][bYhY'g]W\'Y]bVYXUiYf`]W\Yf'JYf\_Y\fgibZU``ž'XYf'X]Y'JYf`Yhnib['Y]bYg'9!GWcchYfZU\fYfg'nif':c`[Y'\UhhY"'8Yf'JcfZU``ž'XYf'g]W\'Ua'gdÀhYbBUW\a]hhU['[Y[Yb'%)"%)'I\f'UVgd]Y`hYž'k]fZh':fU[Yb'fibX'ia'X]YG]W\Yf\Y]h']a 'GhfU»YbjYf\_Y\f'UiZž']bgVYgcbXYfY'ZØf':U\fYbXY'UiZ9`Y\_hfcgWcchYfb"

 $k\ Uf'i\ b\ X'\ X]\ Y'\ J\ cf\ ZU\ h'\ X\ Y\ g'\ 9!\ G\ Wc\ ch\ Y\ f\ ZU\ f\ Y\ f\ g'\ b\ ]\ W\ h'\ k\ U\ f\ b\ Y\ b\ \_cb\ b\ h\ Y''$ 

### 8 Y hU]`gʻni a 'I b ZU``

8 i fWX 'XYb '5 i ZdfU```k i fXY 'XYf'9!GWcchYfZU\fYf'\YZh][ 'ni '6cXYb [YgWX 'Yi XYfhž'k Ug'ni 'Yfbgh\UZhYb'J Yf`Yhni b[Yb 'ZØ\fhYž'X]Y'?cdZlž Fi a dZl'i bX'; ']YXa U» Yb 'i a ZUgghYb"'8]Y 'gWXbY``'Y]b[Y`Y]hYhYb FYhhi b[ga U» bU\a Yb'[Yk À\f`Y]ghYhYbž'XUgg'XYf'J Yf`YhnhYnY]hbU\']b'Y]b'bU\Y[Y`Y[YbYg'?fUb\_Yb\Ui g'[YVfUWXh'k i fXYž'k c Yf'ghUh]cbÀf'VY\UbXY`h'k YfXYb'a i gghY"

8]Y'Dc`]nY]ž'[YbUiYf'[YgU[h'X]Y'JYf\_Y\fgYfa]hh`Yf'XYf
Dc`]nY]X]fY\_h]cb'&'fK YghŁž'\UVYb'X]Y'9fa]hh`ib[Yb'ni'XYa'JcfZU``UiZ[YbcaaYb"'8ifW']\fY'5fVY]h'gc``Yb'X]Y'LaghÀbXY'XYg
LbZU``g'[YbUiYf'UiZ[Y\_`Àfh`kYfXYbž'ia'ni\_ØbZh]['À\b`]W\Y
JcfZÀ``Y'ni'jYfaY]XYb"'Gc`W\Y'9fa]hh`ib[ghYUag'g]bX'YggYbn]Y``ž
XU'g]Y'jYfgiW\Ybž'X]Y'[YbUiYb'5V`ÀiZY']b'JYf\_Y\fgibZÀ``Yb'ni
fY\_cbghfi]YfYb"'CZh'g]bX'Yg'\_cad`YLY'GnYbUf]Ybž']b'XYbYb
JYf\_Y\fgfY[Y`bž':U\fjYf\U`hYb'ibX'G]W\hjYf\À`hb]ggY'Y]bY'Fc``Y
gd]Y`Yb"

 $8 \ Yf' \ J \ cfZ \ J''' \ k \ ]fZ \ h'' \ i' \ k \ ]W \ h][\ Yg'@]W \ h'' \ i' \ Z' \ J'' \ k \ UW \ gYb \ XY \ Bi \ hni \ b[\ 'j \ cb '9! \ GWc \ ch Yfb ']b 'gh \ Xh]gW \ Yb'; \ YV]Yh \ b''' \ A \ ]h' \ XYf \ ni \ bY \ a \ Yb \ XYb' \ Gh \ Y'' \ B \ J'' \ ga \ ]hh \ ''gh \ ][\ h \ Ui \ W \ X]Y \ '5 \ b \ U \ 'Y'' \ B \ J'' \ B \ J'' \ B \ J'' \ J'' \ B \ J'' \ J'' \ J'' \ J'' \ J'' \ B \ J'' \ J$ 

# 8 Yf'GhY``Ybk Yfh'XYf'G]WX Yf\Y]h']a GhfU» Ybj Yf\_Y\f

8]Y'l bZU``nU\`Yb']a 'Ni gUa a Yb\Ub['a]h'9!GWcchYfb'i bX'UbXYfYb Y`Y\_hf]gW\Yb'@Y]\ZU\fnYi [Yb'j YfXYi h`]W\Yb'X]Y'Bchk YbX][\_Y]hž a Y\f'ZØf'X]Y'G]W\Yf\Y]h']a 'GhfU" Ybj Yf\_Y\f'ni 'hi b"

5 i Z\_`Àfi b[g\_Ua dU[bYb'i bX'[YY][bYhY' ₺ ZfUghfi \_hi f'g]bX bchk YbX][ž'XUa ]h'gck c\`': i » [Àb[Yf'U`g'Ui W\': U\fYbXY'g]W\\g]W\Yf'VYk Y[Yb'\_ÒbbYb"

9]b'k Y]hYfYf'5gdY\_h']gh'XYf'fYW\h`]W\Y'FU\a Ybž'XYf'ZØf'9!GWcchYf []'h"J]Y`Y'Bi hnYf'g]bX'g]W\'XYf'gdYn]Z]gW\Yb'JcfgW\f]ZhYbž'k]Y Yhk U'; YgW\k]bX][\_Y]hgVY[fYbni b[Yb'cXYf'XYb'FY[Y`b'Ub 5a dY`bž'b]W\h'j c``gh\AbX]['VYk i ggh"'I a gc'k]W\h][Yf']gh'Ygž'XUgg Ui W\'VY]'XYf'JYfa Uf\_hi b['X]YgYf': U\fnYi [Y'Ui Z'5i Z\_`\Afi b[ [YgYhnh'k]fXž'i a 'X]Y'Bi hnYf'ØVYf']\fY'DZ']W\hYb'i bX'FYW\hY'ni ]bZcfa ]YfYb"

±0.6Yf`]b []Vh'Yg'VYfY]hg ±0]h]Uh]j Ybž'X]Y 'XUfUi Z'UVn]Y `Ybž'X]Y

±0hY[fUh]cb 'j cb '9!GWcchYfb 'i bX 'UbXYfYb

A]\_fca cV]`]hÀhg`Ògi b[Yb ']b 'XYb 'ghÀXh]gWXYb 'J Yf\_Y\f'ni
cdh]a]YfYb " 8 Uni '[Y\ÒfYb 'A U» bU\a Yb 'k]Y 'gdYn]Y``Y 'F UXk Y[Yž
X]Y 'XYb '9!GWcchYfZU\fYfb 'Y]bYb 'g]WXYfYb 'F Ui a 'V]YhYb 'gc``Ybž
gck]Y 'Y]bY 'j YfghÀf\_hY ', VYfk UWXi b['j cb 'J Yf\_Y\fgfY[Y`b" 'Hfchn
XYf'dcg]h]j Yb '5 Vg]WXhYb ']gh'Yg 'YXcWX 'i bYf`Àgg`]WX ž'XUgg'U``Y
J Yf\_Y\fghY]`bY\a Yfž'gY]'Yg'Ui Z'nk Y]'cXYf'j]Yf'F ÀXYfbž']\fY
J YfUbhk cfhi b[']a 'GhfU» Ybj Yf\_Y\f'Yfbgh'bY\a Yb"

8]Y'GhÀf\_Y'XYf'GhÀXhY'`]Y[h']b']\fYf': À\][\_Y]hž'g]W\'Ub'bYi Y
A cV]`]hÀhgZcfa Yb'Ubni dUggYb"'CV'9!GWcchYfž': U\ffÀXYf'cXYf
5i hcj Yf\_Y\f' 'YXYg'GmghYa 'VYbÒh][h'Y]b
J YfUbhk cfhi b[gVYk i gghgY]b'i bX'\_`UfY'FY[Y`b"'8]YgYf'I bZU```]b
A cUV]h'gc``hY'Y]b'5bghc» 'gY]bž'X]Y'G]W\Yf\Y]h'ZØf'U``Y'6YhY]`][hYbk Y]hYf'ni 'j YfVYggYfb'i bX'XUg'6Yk i gghgY]b'ZØf'X]Y
J Yf\_Y\fqfY[Y`b'ni 'gW\ÀfZYb"

# < ]bhYf[ fi bX]bZcfa Uh]cbYb ni '9!GWcchYfb']a GhUXhi Yf Y\f</pre>

i a k Y`hZfYi bX`]W\Y'i bX`ZYI ]V`Y`5`hYfbUh]j Y`ni `5i hcg`XUfghY``Ybž ]bgVYgcbXYfY`]b`ØVYfZØ``hYb`i fVUbYb'; YV]YhYb"'@Ui h'Y]bYf'Ghi X]Y j cb'GhUh]ghU'bi hnhYb']a '\\\f\&\&\'Yhk U'\&\'\ XYf'6YZfU[ hYb']b 8Yi hgW\`UbX'Y]bYb'9!GWcchYfž'i a '\_i fnY'GhfYW\_Yb']b'XYf \\\b\YbghUXh'ni fØ\W\_ni `Y[ Yb"

5i Z'XYf'UbXYfYb'GY]hY'[]Vh'Yg'nU\`fY]WXY'G]WXYf\Y]hgVYXYb\_Yb"

8]Y'i b[YbØ[YbXY'\DZfUghfi\_hi f'ZØf'FUXZU\fYf'i bX'9!GWcchYf'ZØ\fh\Ai Z]['ni''[YZÀ\f']WXYb'G]hi Uh]cbYbž']bgVYgcbXYfY']b'GhÀXhYb'k]Y

6Yf`]b"'?cbZ]\_hY'nk]gWXYb'9!GWcchYfZU\fYfbž':i»[Ab[Yfb'i bX

5i hcZU\fYfb'g]bX'Ub'XYf'HU[YgcfXbi b["'I a 'XUg'G]WXYf\Y]hgf]g]\_c

ni 'j Yff]b[Yfbž'\UVYb'Y]b][Y'GhÀXhY'A U» bU\a Yb'k]Y'X]Y

GWXUZZi b['j cb'gdYn]Y``Yb': U\fgdi fYb'ZØf'9!GWcchYf'i bX'X]Y

9]bZØ\fi b['j cb'; YqWXk]bX][\_Y]hqVY[fYbni b[Yb'Yf[f]ZZYb"

## GhUh]gh]gW\Y`8 UhYb`ni 'J Yf\_Y\fgi bZ\``Yb`a ]h 9!GWcchYfb

@Ui h'XYa '8 Yi hgWX Yb 'GhUh]gh]gWX Yb '6i b X YgUa h'\Uh'X]Y'NU\`
XYf'J Yf\_Y\fgi bZÀ``Y'a ]h'9!GWcchYfb']b'XYb'`YhnhYb'\$J\fYb
ni [Ybca a Yb"'=a '\$J\f'&\$&&'k i fXYb'ØVYf') "&\$\$'9!GWcchYf!
I bZÀ``Y']b'8 Yi hgWX`UbX'YfZUggh"'8]Yg'ghY``h'Y]bYb'5bgh]Y['jcb
Yhk U'&) 'i ']a 'J Yf['Y]WX'ni a 'J cf'U\f'XUf"'8]Y'\Ài Z][ghYb
I fgUWX Yb'ZØf'X]YgY'I bZÀ``Y'g]bX'5V`Yb\_i b[Ybž'XUg': U\fYb'i bhYf
5`\_c\c`i bX'XUg'A]ggUWX hYb'j cb'J Yf\_Y\fgfY[Y`b"'

9]b'k Y]hYfYf'VYgcf[b]gYffY[YbXYf'HfYbX']gh'X]Y'ghY][YbXY'5bnU\`XYf'gWk YfYb'JYf'Yhni b[Yb'VY]'X]YgYb'I bZÀ``Yb"'9]bY'Ghi X]Y'XYg'6i bXYga ]b]ghYf]i a g'ZØf'JYf\_Y\f'i bX'X][]hU`Y

-bZfUghfi \_hi f'nY][hž'XUgg'Yhk U'%) 'i 'XYf'9!GWcchYfZU\fYf'VY]
Y]bYa 'I bZU``'?cdZj Yf`Yhni b[Yb'Yf`Y]XYb"'8]Yg'i bhYfghfY]W\h'X]Y
Bchk YbX][\_Y]h'j cb'<Y`a dZ]W\h'i bX'YbhgdfYW\YbXYf'5i Z\_`Àfi b[
ØVYf'X]Y'F]g]\_Yb'XYf'Bi hni b['j cb'9!GWcchYfb"

#### $VYfY[ib[Yb'nif'JYf_Y\fgg]WXYfY]h$

]b XYb `YhnhYb '\\]\fYb `Ub '8 f]b[ `]W\\_Y]h [ Yk cbbYb "`GhÀXhY ii bX ; Ya Y]b XYb 'g]b X 'ni bY\a Yb X' [ YZcfXYfhž [ YY][ bYhY 'A U» bU\a Yb ni 'Yf[ fY]ZYb ž i a 'gck c\`'9!GWcchYfZU\fYf 'U`g 'Ui W\ 'Ub XYfY JYf\_Y\fghY]`bY\a Yf 'ni 'gW\ ØhnYb "`8 Uni '[ Y\ÒfYb 'X]Y 'gW\ f]hhk Y]gY \\
\D\hY[ fUh]cb 'j cb '9!GWcchYfb ']b 'X]Y 'VYghY\Yb XY JYf\_Y\fg]b Zf Ughfi \_hi f i b X 'X]Y 'GYbg]V]`]g]Yfi b[ 'XYf'² ZZYbh`]W\\_Y]h ZØf X]Y 'gd Yn]Y``Yb' < Yf Ui gZcfXYfi b[ Yb 'i b X'; YZU\fYb ž 'X]Y 'a ]h ']\fYf B i hni b[ 'Y]b\Yf[ Y\Yb"

9]b][Y'GhÀXhY'\UVYb'VYfY]hg'Dfc'Y\_hY'[YghUfhYhžia '\delta hYfU\_h]cbYb nk]gWXYb'j YfgWX]YXYbYb'J Yf\_Y\fghY]`bY\a Yfb'ni 'cdh]a]YfYbž'k]Yn"6"'gdYn]Y``Y'J Yf\_Y\fgUa dY`b'ZØf'F UXZU\fYf'i bX'9!
GWcchYfZU\fYf"'5i WX'5i Z\_`Afi b[gUfVY]hYbž'X]Y'Ui Z'Y]b'g]WXYfYg: U\fj Yf\U`hYb'i bX'XYb'f]WXh][Yb'I a [Ub['a]h'9!GWcchYfbUVn]Y`Ybž'\_ObbhYb'XUni 'VY]hfU[Ybž'X]Y'I bZU``nU\`Yb'ni 'fYXi n]YfYb i bX'Y]b'VYggYfYg'A]hY]bUbXYf']a 'GhfU»Ybj Yf\_Y\fini 'ZÔfXYfb"

B5;

8 YhU1`a

6Yqi WXYb 'G]Y 'i bq 'Ui Z. 'a Y]b!VYf`]b "bYh