

9fghYf'_ca V]b]YfhYf'; c`X!6]hWc]b!9H: 'gc``]b'9i fcdU'Ui Z[Y`Y[h'k YfXYb

8 UgʻYfghYʻVÒfgYb[Y\UbXY`hYʻDfcXi_hž'XUgʻ; c`Xʻi bXʻ6]hWc]bʻ]b Y]bYaʻY]bn][Ybʻ: cbXgʻ_caV]b]Yfhž'k]fX`Ua'A]hhk cW\`XYVØh]YfYb"

8 Yf: cbXg'k]fX'Y]b'*J\fhUi gYbXY'U`hYg'K YfhUi ZVYk U\fi b[ga]hhY`a]h'Y]bYa'Ui ZghfYVYbXYb'K YfhdUd]Yf'_ca V]b]YfYbž'XUg'Y]b][Y'U`g XUg' bYi Y'X][]hU`Y'; c`X 'Ub[Ydf]YgYb'\UVYb''Ui W\k Ybb'XYf 5Vghi fn'j cb'6]hWc]b']b'XYb'`YhnhYb'A cbUhYb''YXYb'Fi Z'[YhfØVh\Uhž'XYb'Yg'a Ò[`]W\Yfk Y]gY'U`g'Ni Zi W\hgcfh']b'i bfi \][Yb'cXYf]bZUh]cbÀfYb'NY]hYb'\UhhY'"

K]f a UWX Yb \cdot 6]hWc]b \cdot ni \cdot Y]bYa \cdot U_nYdhUV `Yb \cdot J Yfa \circ [Ybgk Yfh i bX Vf]b[Yb \cdot ; c `X \cdot]bg \cdot 8%" \cdot 3U\f\ i bXYfh \dot{z} 'gU[hY \cdot 7\Uf`]Y 'A cff]g \dot{z} '7\]YZ \Rightarrow j Ygha Ybh C ZZ]WW f \cdot j cb \cdot 6mhY HfYY \cdot 5ggYh 'A UbU[Ya Ybhz 'XUg \cdot \]bhYf XYa \cdot 8%G\UfYg \cdot 6mhY HfYY \cdot 6c `X \cdot 3XYI \cdot 9HD \cdot ghY\hz 'XUg \cdot Ub \cdot XYf \cdot G \cdot 4 Gk]gg \cdot 9I W\Ub[Y \cdot bch]Yfh 'k YfXYb \cdot gc ```XYf \cdot H]W_Yf \cdot : 9HH" \cdot 9]bY

K À\fYbX'gck c\`; c`X!9HDg'U`g'Ui W. 'Gdch!6]hWc]b!9HDg i bUV\Àb[]['j cbY]bUbXYf'k Y]h'j YfVfY]hYh'g]bX' 'ni a]bXYgh']b ?cbh]bYbhU`Yi fcdU' 'VY\Ui dhYhY'A cff]gž'XUgg'X]Y'U_h]j Y FYVU`UbW]b[!GhfUhY[]Y'j cb'6mhYHfYY'X]Y'FYbX]hYb']a '6UW_hYgh]b[i a '+!, 'DfcnYbhdi b_hY'dfc'*J\f'j YfVYggYfh`\UVY"

8 Yf: cbXg'k]fX'a cbUh`]W\"Ui Z'XYf'; fi bX`U[Y'XYf'\]ghcf]gW\Yb Jc`Uh]`]hÀh'j cb'' *\$'HU[Yb'bYi '[Yk]W\hYhž'k cVY]'XYf'k Yb][Yf j c`Uh]`Y'JYfa Ò[Ybgk Yfh'\Ò\Yf'[Yk]W\hYh'k]fXž'i a 'X]Y f]g]_c[Yk]W\hYhYb'FYbX]hYb'ni 'a Ul]a]YfYb"' +b'XYf'FYU`]hÀh VYXYi hYh'X]Ygž'XUgg'; c`X'XUg'DcfhZc`]c'hYbXYbn]Y``Xca]b]Yfhž'a]h Y]bYf'; Yk]W\hi b['nk]gW\Yb'+\$'i bX'-\$'DfcnYbh']a '6UW_hYgh]b[ž XUg'V]g']bg'*J\f'&\$%*'ni fØW_fY]W\h'

A]f Z]Y``Ui Zž XUgg 6]hWc]b i bX; c`X]a a Yf Ubh]nm_`]gWk k UfYb"`A]f]gh'_`Ufž XUgg 6]hWc]b igWk cb]a a Yf a]h XYa '5_h]Yba Uf_h cXYf a]h F]g]_cUb`U[Yb]a '5``[Ya Y]bYb _cffY`]Yfh k Uf ž gU[hY A cff]gž V]g &\$%) '@Y]hYf XYg 6YfY]Wk g 5Vgc`i hY F Yhi fb 'VY]' < G67ž k c 'Yf a Y\f U`g'' 'A]``]UfXYb I G!8c``Uf'j Yfk U`hYhY"

A cff]g'VY\Ui dhYhYž'XUgg'XUg'9HD']a '6UW_hYgh]b[']b'XYb'`YhnhYb $Z\emptyset$ bZ'\U\fYb'k Yb][Yf'j c`Uh]`'[Yk YgYb'gY]'U`g'UW\h'XYf'nY\b [fÒ» hYb'5_h]Yb']b'XYb'I G5ž'bi f'ØVYfhfcZZYb'j cb'6Yf_g\]fY < Uh\Uk Um'i bX'\&\bgcb'/ '\&\bgcb'/ '\&\bgcb''

 $F @W_V`]W_YbX`Ui Z`&$\%(`k AfY`XYf`[fO) hY`JYf`i gh`]a `?U`YbXYf'U\f &$\%, `%&ž+`DfcnYbh`[Yk YgYbž`Y]b`$J\fž`]b`XYa `6]hWc]b`i a `+' ž DfcnYbh`Y]bVfUW\"$

9g`\ÀhhY`ØVYf`XYb`[YgUa hYb`NY]hfUi a `&\$%(!&%`Y]bY`_i a i `Uh]j Y FYbX]hY`j cb`'*'`DfcnYbh`Yfn]Y`hž'j Yf[`]W\Yb`a]h`'", %*`DfcnYbh`ZØf 6]hWc]bž'), `DfcnYbh`ZØf`; c`Xž'%' (`DfcnYbh`ZØf`XYb`G/ D)\$\$!5_h]Yb]bXYI`i bX`, &`DfcnYbh`ZØf`]bZ`Uh]cbg[YgW\ØhnhY`I G!GhUUhgUb`Y]\Yb`K YfhdUd]YfY"

8]Y'À\f`]W\Yb'; YVØ\fYb'VYhfU[Yb'%Z(-'DfcnYbhz'k Ug'ZØf'Y]b'9HD]a '5``[Ya Y]bYb'\cW\']ghz'UVYf'b]W\h'VYgcbXYfg'ZØf'Y]b?fmdhcdfcXi_h"A cff]g'gU[hYz'XUgg'X]Y'?cghYb'XifW\'X]YGW\k]Yf][_Y]h']b'X]Y'<Ò\Y'[Yhf]YVYb'k i fXYbz'Y]bYb'JYfk U\fYf'niZ]bXYbz'XYf']b'XYf'@U[Y'i bX'VYfY]h']ghz'gck c\`'d\mg]gW\Yg'; c`X'U`gUi W\'6]hWc]b'ni '\UbX\UVYb"'6mhYHfYY'a i gghY'gW\`]Y»`]W\'X]YJYfk U\fib['nk]gW\Yb'\DA cf[Ub'fZØf'; c`XŁ'i bX'7c]bVUgYfb'hWc]bŁ'Ui ZhY]`Yb"

BcW.'b]Y'nijcf']b'XYf'; YgWX]WXhY'\UhhY'Y]b'9HD'nkY]
ibUV\Àb[][Y'8YdchVUb_Yb ž'gU[hY'Acff]g"' B]Ya UbX'Uig'XYf
U`hYb'K Y`h'\Uh'Y]bY'5\bib[ž'k Ug'a Ub'a]h'6]hWc]b'UbZUb[Yb'gc``"

8 UgʻDcfhZc`]cʻYf]bbYfhʻUbʻXUgʻj cbʻFUmʻ8 U`]cž; fØbXYfʻXYf < YX[YZcbXg!; fi ddYʻ6f]X[Yk UhYfʻ5ggcW]UhYgž'VYgWkf]YVYbY DcfhZc`]cž'U`gʻYfʻ[YZfU[h`k i fXYž'cVʻYfʻ8 c``Ufž'; c`XʻcXYfʻ6]hWc]b k À\`Ybʻk ØfXYž'i a ʻYgʻZØfʻY]bYbʻFY[YbhU[ʻi bhYfʻgY]bʻ6Yhhʻni `Y[Yb"' =\Wk`k ØfXYʻXUgʻ; c`XʻbY\a Yb"'"'\=\Wk`k ØfXYʻ[YfbY`Ui Wk`Y]b V]ggWkYbʻ6]hWc]bʻ]bʻX]YgYʿA]gWki b[ʻghfYi Yb ž'Ubhk cfhYhYʻYf"

9]b][Y '[`Ui VYbž'XUgg'6C @8 'Y]bY 'VfY]hY 'A Uf_hUhhfU_h]j]hÀh'\UVYb k]fX"

#bj YghcfYb 'VYhfUW\hYb'6]hWc]b'cZh'U`g'U`hYfbUh]j Y'5b`U[Y'ni '; c`X
i bX'UbXYfYb'Fc\ghcZZYbž'XU\Yf']gh'Yg'ØVYfnYi [YbXž'Y]bYb': cbXg
ni '\UVYbž'XYf'VY]XYg'VYg]hnh ž'gU[hY'HcXX'FcgYbV`i h\ž
: cfgW\i b[g`Y]hYf'VY]'9H: 'HfYbXg"

Df]j UhUb`Y[Yf'_ObbhYb`gY]bYf'AY]bi b[`bUW\`XUj cb`dfcZ]h]YfYbž XUgg`X]Y`YkY]`][Yb'; Yk]W\hi b[Yb'Ui hca Uh]gW\`XmbUa]gW\Ub[YdUgghkYfXYbž'c\bY`X]Yg`gY`Vgh'hi b`ni 'a ØggYb

5``YfX]b[g'k UfYb'b]W\h'U``Y'j cb'XYb'JcfnØ[Yb'XYg': cbXg ØVYfnYi [h"

?YbbYh\ '@Ua cbhž'GYb]cf': i bX '5bU`mgh'ZØf'dUgg]j Y 'GhfUhY[]Yb'VY] A cfb]b[ghUfž'gU[hYž'X]Y 'GW\ `ØggY`ZfU[Y'gY]ž'k cZØf' 'Ya UbX']b'X]YgY J Yfa Ò[Ybgk YfhY']bj Ygh]YfY"

±0.6Yni ['Ui Z'; c`X'_Ubb'a Ub'gU[Ybž'XUgg'Yg'j c`Uh]`']ghž'UVYfbcfa U`Yfk Y]gY']gh'Yg'j c`Uh]`ž'k Ybb'G]Y'Yg'k c``Yb"'G]Y'a ÒW\hYbž XUgg'Yg']b'?f]gYbnY]hYb'Y]bYb'<Ò\Ydi b_h'YffY]W\h ž'gU[hY@Ua cbh"

 $5VYf^{[`UiVh']}f[YbX'Ya\ UbXž'XUgg^{;}\ c`X'Ui\ Z'i\ bVYgh]a\ a\ hY'NY]h \\ ghY][Yb'k]fX3'K\ U\ fgWXY]b^{[]}WX'b]WX'h^{['9g']}ghY]b^{[JYfa]}b^{[$

K Ug'X]Y'?fmdhck À\fi b[ggY]hY'XYg'@YX[Yfg'VYhf]ZZhž'gU[hY@Uacbh: K Ybb'G]Y'X]Y'Jc`Uh]`]hÀh'jcb'6]hWc]b'b]W\h'kc``Ybž'XUbbgc``hYb'G]Y'g]W\j]Y``Y]W\h'b]W\h'a]h'6]hWc]b'VYgW\ÀZh][Yb"=b[Yk]ggYa'G]bbY'_Ui ZYb'G]Y'Yg'kY[Yb'gY]bYf'Jc`Uh]`]hÀh"

 $6Y]^{X}YgYb^{5}b^{U}[Y_{ugg}Yb^{g}]gh^{U}c^{Uh}]^{h^{h}b}Wh^{i}bVYX]b[h^{X}Yf^{g}] \\ + Y]bX \quad z^{i}gU[h^{Y}Yf^{i}bX^{i}Z0[h^{Y}]^{h^{i}}]bni . \quad + W^{V}b^{i}b]W^{h}g]W^{Y}z^{i}cV^{X}]Yg \\ + Y]b^{i}y^{f}b^{0}b^{2}h][Yf^{5}b^{g}Uhn^{i}]gh^{u}$

@Ua cbh'VYnk Y]ZY`hY'Ui W\'X]Y'dchYbn]Y``Y'@Ub[`YV][$_$ Y]h'j cb 6C@8"

@YhnhYbX`]W\`@VYf`YVYb`[YfUXY`X]YgY`B]gW\YbZcbXg`b]W\h"`G]Y g]bX`j]Y``Y]W\h'ni`_ca d`]n]Yfh'i bX`X]Y`; YVØ\fYb`k YfXYb`Y]bXYi h][Y]bYb`[fc»Yb`HY]``XUj cb`Ui ga UW\Yb ž'ZØ[hY`Yf`\]bni "

8 Y hU]`q

6 Y gi W Y b 'G]Y 'i b g 'Ui Z '_fmd hc!b Y k g "Uh