

: U\ffUXhU[YVØWXYf.'9]bY'FUXhcif'XifWX A mUba Uf

I bgYfY F UXhci f Xi fW 'A mUba Uf 'Vch' XYb 'dYfZY_hYb '9]bV`]W_
]b X]Y V]fa Ub]gWXY?i `hi fž'[YdUUfh'a]h XYf '5fh'j cb 'Ci hXccf!
5VYbhYi YfbžX]Y k]f '`]YVYb '@YgYf 'X]YgYg '6`c[g'k YfXYb
k]ggYbž XUgg ']WX 'a Y]bY '5VYbhYi Yf '`]YVYf 'Ui Z'nk Y] '6Y]bYb
U`g 'Ui Z'nk Y] F ÀXYfb 'VYj cfni [Y" K Ybb ']WX 'X]Y 'K U\``\UVYž
YbhgWXY]XY ']WX 'a]WX 'bcfa U`Yfk Y]gY 'ZØf XUg K UbXYfb 'ghUhh
ZØf XUg F UXZU\fYb" '5`g'k]f 'YXcWX 'X]Y '; Y`Y[Yb\Y]h`\UhhYbž
nk Y] 'K cWXYb '`Ub['a]h'; '5Xj Ybhi fYg Xi fWX 'A mUba Uf 'ni
fUXY`bž'k c``hY']WX 'X]Y '; Y`Y[Yb\Y]h'b]WX h'j YfghfY]WX Yb
`UggYb" '8]Y FY]gY '\UhhY 'Y]bYb '< U_Yb . K]Y 'VY] 'XYb 'a Y]ghYb
a Y]bYf '5VYbhYi Yf \UhhY ']WX 'a Y]bYb 'hfYi Yb '?ca d`]nYb
XUVY] '`UVYf '?]U _cbbhY '_Ui a '/ Ua d\Y \``]d/

I bgYfY'FUXhci f'Xi fW\'A mUba Uf'Vch'XYb'dYfZY_hYb'9]bV`]W_']b'X]Y V]fa Ub]gW\Y'?i `hi fž'[YdUUfh'a]h'XYf'5fh'j cb'Ci hXccf! 5VYbhYi Yfbž'X]Y'k]f'`]YVYb

@YgYf'X]YgYg'6`c[g'k YfXYb'k]ggYbž'XUgg']W\'a Y]bY'5VYbhYi Yf
`]YVYf'Ui Z'nk Y]'6Y]bYb'U`g'Ui Z'nk Y]'FÀXYfb'VYj cfni [Y"'K Ybb']W\
X]Y'K U\`'\UVYž'YbhgW\Y]XY']W\'a]W\'bcfa U`Yfk Y]gY'ZØf'XUg
K UbXYfb'ghUhh'ZØf'XUg'FUXZU\fYb"'5`g'k]f'YXcW\'X]Y'; Y`Y[Yb\Y]h\UhhYbž'nk Y]'K cW\Yb'`Ub['a]h'; '5Xj Ybhi fYg'Xi fW\'A mUba Uf'ni
fUXY`bž'k c``hY']W\'X]Y'; Y`Y[Yb\Y]h'b]W\h'j YfghfY]W\Yb'`UggYb"

8]Y'FY]gY'\UhhY'Y]bYb'<U_Yb.'K]Y'VY]'XYb'a Y]ghYb'a Y]bYf
5VYbhYi Yf'\UhhY']W\'a Y]bYb'hfYi Yb'?ca d`]nYb'XUVY]' 'UVYf'?]U
_cbbhY'_Ui a ': U\ffUX'ZU\fYb''FY]hYb''YfbhY'g]Y'Yfgh'a]h'&,
\$U\fYb"'\D'XYb'Zc`[YbXYb'\D\fYb'\OVhY'g]Y'bi f'bcW\'UV'i bX'ni ž
ghØfnhY'\Ài Z]['UV'i bX'VY_Ua 'XUVY]'V`Ui Y': YW_Yb"

Jcf:X]YgYa '<]bhYf[fi bX:k Uf']W. 'Yhk Ug:g_Ydh]gW. 'VY]'Y]bYf
nk Y]k OW.][Yb:FUXhci f:Xi fW. 'A mUba Ufž:X]Y'hÀ[`]W. 'nk]gW.Yb:&\$
i bX:, \$:_a 'ni fØW_`Y[hY":?]U'k Uf'YXcW.'k]Y']a a Yf
i bVY_Øa a Yfh"'K À\fYbX:XYf'[YgUa hYb:Hci f'k Uf'Y]b
6Y[`Y]hZU\fnYi ['ni [Yg]W.Yfhž'i bX']W.'j YfgdfUW.ž'k À\fYbX:XYf
: U\fhYb']b:XYf'BÀ\Y:ni 'V`Y]VYb", VYfnYi [h'a Y`XYhYb'k]f'i bg'Ubž
Vi W.hYb:: `Ø[Y'i bX'_Ui ZhYb'i bgYfY'FUX\UbXgW.i \Y"

8]Y``YhnhY`@Ub[ghfYW_Yb!FUXhcifžX]Y`]W\`[Ya UW\h`\UVYžk Uf`Y]bY FY]gY`jcb`?ØghY`ni`?ØghY`eiYf`XifW\`;fc»Vf]hUbb]Yb"`9fghYbg k UfYb`Yg`bif`XfY]`HU[Y`ibX`nkY]hYbg`k Uf`Yg`XifW\`Y]b`j]Y` a]`XYfYg`?`]aU"`8Ug`k ØfXY`Y]b`[Ubn`UbXYfYg`FUXZU\fYf`YVb]g k YfXYb°

K]f'hfUZYb'i bgYfYb'79C'ff7\]YZ'9I dYf]YbWY'C ZZ]WYfŁŽ'7\]hŽ ni gUa a Yb'a]h'i bgYfYb'Ub[Y\YbXYb'FUXgdcfh_c``Y[Yb']b MUb[cb"'8]Y'; fi ddY'VYghUbX'bi f'Ui g'bYi b'DYfgcbYb'd`i g'7\]hŽ Y]bYa 'UbXYfYb'FY]gY`Y]hYfŽ'XYb'k]f'U`g'< Yffb'H\Y]b'_UbbhYbŽ'i bXY]bYa '_`Y]bYb'<]`ZghYUa 'Ui g'A YW\Ub]_YfbŽ': U\fYfb'i bX'`c_U`Yb 9I dYfhYb"

'U`h1]bhYfYggUbhY'ZU_hYb'ØVYf'a mUba Uf 25h`Ug'/ '6cchg'8]Y j Yf[c`XYhY'G\k YXU[cb'DUmU']b'MUb[cbž'GhUfh!'i bX'9bXdib_h i bgYfYf'Hcif

7\]h'Yfk]Yg'g]W\'U`g'Ui g[YnY]W\bYhYf'; Ugh[YVYf'i bX': Ø\fYfž j c``Yf'K]ggYb'i bX'Ghc`n'Ui Z'gY]b'@UbX"'9f'_UbbhY'X]Y'DfcV`Ya Y A mUba Ufgž'k Uf'UVYf'VY[Y]ghYfh'XUj cbž'k]Y'XYf'Hci f]ga i g'\Y`ZYb _\ObbhYž'g]Y'Ubni [Y\Yb"'9f'k Uf'a Y\f'U`g'[`ØW_`]W\ž'i bgYfY': fU[Yb ni 'gY]bYa '@UbX'ni 'VYUbhk cfhYbž'k Ug'[fc» Ufh]['k Ufž'XYbb'a Y]b [YgUa hYg'K]ggYb'ØVYf'A mUba Uf'ghUa a hY'Ui g'XYf'@Y_hØfY'j cb; Ycf[Y'Cfk Y``g'n]Ya `]W\'XYdf]a]YfYbXYb'6i fa YgY'8 Umg"

BUWX Y]bYa BUWXa]hhU[ii bX 5VYbX i]b MUb[cb Zc[Yb k]f bUWX BcfXYb bUWX BmUi b[g\k Y i]b XYf BÀ\Y XYg \ \ Y!GYYgži a X]Y FY]gY Yfbgh\UZh ni VY[]bbYbži bgYfY : U\ffÀXYf ni VYghY][Yb ii bX i bg Ui Z XYb K Y[ni a UWX Yb K]f hUhYb X]Yg ii bhYf Y]bYf dfU Yb GcbbYž k À\fYbX <]hnY [Y]WX nY]h][j ca <]a a Y cVYb ii bX XYa

5gd\U`h'i bhYb'ghfÒa hY"'8]Y'[UbnY'; fi ddY'ZUbX'XUg'FUXZU\fYb']bX]YgYa '?`]a U'UbghfYb[YbXž'UVYf'?]U'\UhhY'a Y\f'ni '_Àa dZYb'U`gUbXYfY' 'VYgcbXYfg']b'XYb'6Yf[Ui ZdUggU[Yb"

"U`h1 FUXhcif'Ua '±o`Y!GYY']b'A mUba Uf 25h`Ug'/ '6cchg'; `Y]hYb G]Y'XifW\'@chigdZUbnYb'ibX'K UggYf\mUn]bh\Yb'UiZ'XYa '±o`Y!GYY

8 Yf YfghY 'HU['j Yf`]YZ ØVYf 'fY`Uh]j 'a c XYfUhY '&* '_a 'f%* 'A Y]`YbŁ Ybh`Ub['XYf'I ZYf 'XYg' =b`Y!GYYgž'i bX']W 'k Uf 'VYgcf[hž'k]Y '?]U'X]Y Zc`[YbXYb 'UbghfYb[YbXYfYb 'HU[Y 'VYk À`h][Yb'k ØfXY"'Ni 'k]ggYbž XUgg'k]f 'Y]b '6Y[`Y]hZU\fnYi ['' 'Ui W ' 6YgYbk U[Yb '[YbUbbh' \UVYb'k ØfXYbž'k Uf 'Y]b'[fc» Yf 'Hfcgh"

K]f'VY]XY``]YVYb`Ygž'X]Y`K Y`h'j ca '6cXYb`Ui g'ni 'gY\Ybž'i bX FUXZU\fYb`Vf]b[h'i bg`@UbX`i bX`@Yi hYb`Vi W\ghÀV`]W\'bÀ\Yf'i bX V]YhYh'XUVY]`Ui h\Ybh]gW\Y`GY\Ybgk ØfX][_Y]hYb`i bX'; YfØW\Y''`K]f k c``hYb`VY]XY`gc`j]Y``NY]h`]a 'GUhhY``i bX`gc`k Yb]['NY]h`k]Y a Ò[`]W\`Ui Z'XYf`@UXYZÀW\Y`Y]bYg`@]YZYfk U[Ybg`j YfVf]b[Yb''`K]f k UfYb`b]W\h'bUW\`A mUba Uf`[Y_ca a Ybž'i a 'Yg`Xi fW\`XYb 8Yg]bZY_h]cbgZ]`hYf`Ui g'; `Ug`ni 'gY\Yb' 'k]f`k UfYb`bUW\`A mUba Uf [Y_ca a Ybž'i a 'Yg`Xi fW\`XYb

'U`h1 fUXhci f!Xi fWX!a mUba Uf!dYhYf 25h`Ug'/ '6cchg'FUXZU\fYb Vf]b[h'i bg'@UbX'i bX'@Yi hY'Vi WXghÀV`]WX'bÀ\Yf

; ` ∂ W_`]W\Yfk Y]gY`k UfYb`X]Y`HU[Y`XYg`FUXZU\fYbg` ∂ VYf`X]Y`Hcif j YfhY]`hž`a]h`Fi\YhU[Yb`ibX`K UbXYfib[Yb`[Ya]gW\ha]h GUhhY`nY]h"?]U`\UhhY`NY]hž`Ub`]\fYf`HYW\b]_`ni `ZY]`Yb`ibX`k ifXY XUVY]jj ca `U``[Y[Ybk Àfh][Yb`7\]hi bhYfgh ∂ hnh" 5b`Y]bYa `XYf `Àb[YfYb`HU[Y`]a `GUhhY``j YfVfUW\hY`Yf`XYb`HU[`a]h`?]Už`Z\f\Ub]\fYf`GY]hY`ibX`[UV`< ∂ [Y``Z\Df'< ∂ [Y``5bk Y]gib[Ybž`k]Y`a Ub`X]Y; Àb[Y`VYbihnh`ibX`XUg`6YghY`Uig`U``Yb`5VZU\fhYb`\YfUig\c`h"8]Yg`[UV`a]f`Y]b`V]ggW\Yb`aY\f`:fY]\Y]hž`]b`aY]bYa`Y][YbYbHYadc`ni`ZU\fYb`ibX`Ubni\U`hYbž`kYbb`]W\`:chcg`aUW\Ybkc``hY"

BYVYb`XYa `fi\][Yb`\=b`Y!GYY`ZØ\fhY`X]Y`Hcif`ni `XYb`gW\`ObghYb GY\Ybgk ØfX][_Y]hYb`A mUba Ufgž`XUfi bhYf`X]Y`gi ffYU`Yb`D]bXUmU! < O\`YbžY]bY`i bhYf]fX]gW\Y`GUa a `i b['j cb'a Y\f'U`g', "\$\$\$
6i XX\Ug/Y]bY`BUW\h\ UbXYfi b['ni a 'MUgU_m]!?`cghYf']b`XYb
< Ø[Y`b'cVYf\U`V'j cb'D]bXUmU/`A UbXU`Umi bX`X]Y``Àb[ghY
HYU_\c`nVfØW_Y`XYf`K Y`h'VY]`I '6Y]b/`A ci bh'DcdU'i bX`XYf`Hi Ub[!?U`Uh!HYa dY``Ui Z'Y]bYa 'Ji`_Ub_Y[Y`/i bX`bUhØf`]W\`X]Y
k i bXYfgUa Y`5i gg]W\h'Ui Z'6U[Ub'a]h'gY]bYb'&"\$\$\$'Ghi dUg"</pre>

- 'U`h1 2
- 'U`h1 =bhYfYggUbhY': U_hYb'ØVYf'XYb'=b`Y!GYY!:]gW\Yf']b A mUba Uf 2
- 'U`h1 2
- 'U`h1 2
- 'U`h1 2
- 'U`h1 2

5a '9bXY'VfUi W.hY'?]U'XUg'6Y[`Y]hZU\fnYi['bi f'Y]ba U`ž'i bX'XUg k Uf'Ua '\ÀfhYghYb'HU['XYg': U\fYbg.'Y]b', '_a 'f) & 'A Y]`YbŁ``Ub[Yf 5i Zgh]Y['ni a 'A ci bh'DcdU'Ui Z'%") %, 'A YhYfb'f('"-, \$': i » Ł"'G]Y'k Uf X]Y'YfghYž'X]Y'Xi fW.VfUW.ž'UVYf'k Ybb'a Ub'VYXYb_hž'XUgg'Ub X]YgYa 'HU['bi f'j]Yf'XYf'bYi b'Yg'Ub'X]Y'Gd]hnY'gW.UZZhYbž'gW.b]hh g]Y'ØVYf\Ui dh'b]W.h'gW.`YW.h'UV''8Yf'FYgh'fa]W.`Y]b[YgW.`cggYbŁ\ÒfhY'k Y[Yb'<]hnY'i bX'A ØX][_Y]h'Ui Z'\U`VYa 'K Y['Ui Z'

5a 'j cf`YhnhYb'FUXhU['ghY``hY'g]Y'a]h'7\]hg'<]`ZY'i bX'Y]bYf'Df]gY j cb'?]Ug'i bYfa \emptyset X`]W\Ya 'K YhhVYk YfVg[Y]gh'Y]bY'dYfgÒb`]W\Y 6Ygh`Y]ghi b['Ui Z'Y]bY') &'_a 'fl &'A Y]`YbŁ'`Ub[Y': U\fh'j ca 'A ci bh DcdU'bUW\'6U[Ub'a]h'XYb']_cb]gW\Yb'Ghi dUg'i bX'XYf i bhYf[Y\YbXYb'GcbbY'U`g'6Y`c\bi b["'G]Y'\]Y`h'XYb'[UbnYb'HU[a]h'XYf'; fi ddY'GW\f]hh'i bX' \emptyset VYf\c`hY'Y]ba U`'XfY]'A]h[`]YXYfž a]W\'Y]b[YgW\`cggYb"'\=\f'[Ubn'dYfgÒb`]W\Yf'9j YfYgh'_ÒbbhY'a Ub qU[Yb"

9fa i h][h'Xi fW\']\fY'bYi 'YbhXYW_hYb': À\][_Y]hYbžfUghY'g]Y'Xi fW\X]Y': U\ffUXfci hY'XYg'bÀW\ghYb'HU[Yg'i a '6U[Ub'\Yfi a ž'\]Y`h]a a Yf'GW\f]hh'i bX'j Yf`cf'b]Y'X]Y'; fi ddY"

'U`h1 FUXhci f'Xi fWX 'A mUba Uf'6U[Ub\$(25h`Ug'/ '6cchg'8]Y]_cb]gWXYb'Ghi dUg'j cb'6U[Ub']ba]hhYb'Y]bYf'i bhYf[Y\YbXYbGcbbY

I bgYfY'9fZU\fi b[']b'A mUba Uf'\ÀhhY'b]W\h'i bhYfgW\]YX`]W\Yf'gY]b _ÒbbYb'U`g'Cfk Y``g'Vi fa Yg]gW\Y'HU[Y"'5VYf'UbXYfYfgY]hg']gh A mUba Uf'Y]b'[Ubn'UbXYfYg'@UbX'U`g'6i fa U"

: U\ffUXhcif'XifW\'A mUba Uf.'8Ug K]W\h][ghY

K Ug. % !hÀ[][Y'FUXhcif'XifW\'A mUba Uf'fbifa UŁ"

K c. '8]Y 'Hci f'VY[Ubb ']b 'MUb[cbž XYf'[fÒ» hYb'A Yhfcdc`Y 'XYg @UbXYgž'VYj cf'g]Y 'bUWX 'B cfXYb'ni a '+b`Y!GYYž'D]bXUmU'i bX A UbXU`Um'ZØ\fhYž'XUbb'bUWX 'NYbhfU`!A mUba Uf'a]h'XYa 'A ci bh DcdU'i bX'XYa '+fUk UXXm!: `i ggž'VYj cf'g]Y ']b '6U[Ub'YbXYhY"'8]Y I bhYf_i bZhi a ZUgghY'%\$ 'BÀWXhY']b'_ca ZcfhUV`Yb' < chY`g'XYf Hci f]ghYb_`UggYž'Y]bY'BUWXh']b'Y]bYa '; ÀghY\Ui g'i bX'Y]bY'BUWXh]b'Y]bYa '? `cghYf'fU`g'; UghZUa]`]Y'Y]b[Yghi ZhŁ"

K Ubb. '8]Y 'VYghY 'FY]gYnY]h 'ZØf'A mUba Uf']gh'j cb'C_hcVYf'V]g'A Àfnžk Ybb'XYf'A cbgi b'UV[Y_`i b[Yb']gh'i bX'X]Y 'HYa dYfUhi fYb Ub[YbY\a 'g]bX"'J cb'5df]``V]g'A U]'k]fX'Yg']a '@UbX'gY\f'\Y]» "'8]Y nYbhfU`Yb'FY[]cbYbž']b'XYbYb'6U[Ub'i bX'A UbXU`Um'`]Y[Ybž ÒbbYb'HYa dYfUhi fYb'j cb'ØVYf'(\$'..7'YffY]WXYb'' 'b]WXh']XYU`

ni a 'FUXZU\fYb°'Jcb'A U]'V]g'GYdhYa VYf'_ca a h'Yg'a]h'XYa GØXk Ygha cbgi b'ni '\YZh][Yb'FY[YbZÀ``Yb"'K À\fYbX'X]YgYf'NY]h _\ObbYb'GhfU\(\) Yb'i bdUgg]YfVUf'k YfXYb\(\)'j bgVYgcbXYfY'j cb'\(\) ']'V]g GYdhYa VYf''5V'C_hcVYf'`UggYb'X]Y'FY[YbZ\(\)`Y'bUWX''

 $6YUWXhYbG]YžXUggX]YDfY]gYYY]bYY]bhYfbUh]cbUYb: `\emptyset[YVY]bYUhYb'i bXYgYY]bY8]fY_hZ\emptyset[YUi gXYaUJYfY]b][hYb? Ob][fY]WX[]Vh"AYYfYY: `i [[YgY``gWXUZhYb'V]YhYb'YXcWXCbY!Ghcd!: `\emptyset[Y'j cb'@cbXcb'<YUhYfck' \@VYf'8i VU]ž'?i U`U'@iadifžG]b[UdifcXYf'6Ub[_c_'Ub''6i WXYb'G]Y'@VYf'g_mgWUbbYf''bYh''$

K Ybb G]Y]f[YbXk c Y]bY F UXhci f]b 9fk Å[i b['n]Y Ybž YgYb G]Y i bgYfY ZØbZ H]ddg ZØf F UXfY]gYbXY "

'U`h1 2

@cbY`m'D`UbYh'A mUba Uf']gh'Y]b'i a ZUggYbXYf'FY]gYZØ\fYf'ZØf A mUba Ufž']XYU`'ZØf'X]Y'Yb][Ybž'X]Y'gckc\`'X]Y'k]W\h][ghYbGY\Ybgk ØfX][_Y]hYb'Yf_i bXYb'U`g'Ui W\'X]Y'kYb][Yf'VYZU\fYbYGhfU»Y'bY\a Yb'a ÒW\hYb"

CZZYb`Y[ib[.'K]f'g]bX'a]h'IbhYfghØhnib['jcb'; '5XjYbhifYg'bUWA mUbaUf'[YfY]gh"'5``Y'DiV`]_Uh]cbYb'gU[Yb'XUgž'UVYf'k]f
[UfUbh]YfYb'k]f_`]WX'_Y]bY'dcg]h]jY'6Yf]WXhYfghUhhib["'K]f'gU[YbžkUg'k]f'XYb_Yb''[ih'ibX'gWX`YWXh''XUa]h'G]Y'a]h'Y\f`]WXYf
6YfUhib['Z|bX]YfhY'9bhgWXY]Xib[Yb'hfYZZYb'_ÒbbYb"

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