

DYfi UbYf`]b`Gcf[Y.`l a ZfU[Y`nY][h
XYi h`]WXY`5V`Y`bi b[`XYf`FY[]Yfi b[
6c`i UfhY

DYfi UbYf`Ya dZ]bXYb`[Y[YbØVYf`8]bU`6c`i UfhY`i bX`XYa
?cb[fYgg] cfk]Y[YbXY`; YZØ`Y`j cb`9bhÅi gWxi b[ž`K i hi bX
A]gghfUi Ybž`nY][h`Y]bY`l a ZfU[Y`

B Y[Uh]j Y`9a ch]cbYb`Xca]b]YfYb`X]Y
ÖZZYbh`]WXY`K U`fbY`a i b[`j cb`6c`i UfhY`i bX
XYa `?cb[fYgg

9]bY`U`hi Y`Y`l a ZfU[Y`XYg`bgh]hi hg`ZØf`DYfi Ub]gWXY`Ghi X]Yb
fI9DŁ`Uh`U`Ufa]YfYbXY`9]bV`]W_Y`]b`X]Y`; YZØ`g`U[Y`XYf
dYfi Ub]gWXYb`6Yj Ò`_Yfi b[`[Y[YbØVYf`XYa `U`hi Y`Yb
FY[]Yfi b[ghYUa `i bX`XYa `?cb[fYgg[Y[YVYb`"8]Y`9f[YVb]ggY
nY][Yb`Y]bY`k Y]hj YfVfY]hYhY`l bni Zf]YXYb`Y]hi bX
dYgg]a]gh]gWYg`8Yb`_Ybž`]bgVYgcbXYfY`i bhYf`Øb[YfYb`6Øf[Yfb`

š [YbX`]WXY`ZØ`Y`b`g]WXY`YbhhÅi gWx`hi bX
c`ba ÅWx]h][

6YgcbXYfg`a Uf`Ubh`g]bX`X]Y`bY[Uh]j Yb`9a ch]cbYb`]b`XYf
5`hYfg[fi ddY`XYf`%, !`V]g`&(!`Å`f][Yb`"<]Yf`g]bX`; YZØ`Y`k]Y
HfUi f][_Y]hž`GWxUa ž`C`ba UWx`hi bX`?cffi dh]cb`k Y]hj YfVfY]hYh`
9]bY`g][b]Z]_UbhY`5bnU`Y`j cb`6YzfU[hYb`[UV`Ubž`_Y]bY`9a ch]cbYb
[Y[YbØVYf`XYf`FY[]Yfi b[`ni`Ya dZ]bXYb`"8]YgY`Y`Yf`_Ø`Y
<U`hi b[`_ØbbhY`Ui ZY]b`; YZØ`Y`XYf`9bhZfYa Xi b[`j cb`XYf`Dc`]h]_
`]bk Y]gYb`

I bni Zf]YXYb`Y]h`]b`U`Yb`5`hYfg[fi ddYb

⊕XYb'5'hYfg[fi ddYb'&) 'V]g' - 'ſ\ſY'i bX'(\$'ſ\ſY'i bX'À'hYf
nY][Yb'g]W\À\b`]WY'HYbXYbnYb"K À\ſYbX'HfUi f][_Y]h'X]Y'Ua
\Ai Z][ghYb'[YbUbbhY'9a ch]cb`]b'XYf'A]h'YfYb'; fi ddY']ghž'Vf]b[h
X]Y'À'hYfY'; YbYfUh]cb'; YZØ\`Y'k]Y'J YfUW\hi b['i bX'A]gghfUi Yb
ni a '5i gXfi W_ "⊕U`Yb'5'hYfg_`UggYb'V`Y]Vh'X]Y' l bhYfghØhni b['ZØf
X]Y'F Y[]Yfi b['j cb'8]bU'6c`i UfhY'Zfi ghf]YfYbX'b]YXf]["

F Y[]cbU`Y' l bhYfgW\]YXY']a '9a dZ]bXYb

; Yc[fUZ]gW\ j Uf]]YfYb'X]Y'Ya ch]cbU`Yb'FYU_h]cbYb. '⊕'i fVUbYb
; YV]YhYb'k]Y'@]a U']gh'X]Y'Xca]b]YfYbXY'9a ch]cb`K i hž'k À\ſYbX
]b`ÀbX`]W\Yb'F Y[]cbYb'Y]bY'?ca V]bUh]cb`Ui g'K i hž'HfUi f][_Y]h
i bX'HY`bU\ a g`cg][_Y]hj c f\YffgW\h"8]YgY' l bhYfgW\]YXY' _ØbbhYb
Ui ZX]Y'X]j Yf[]YfYbXYb'@YVYbgfYU`hÀhYb'i bX'X]Y'K U\fbY\ a i b[
XYf'dc`h]gW\Yb': Ø\fi b['ni fØW_ni ZØ\ſYb'gY]b"

F ØW_ [Ub['XYg'J YfhfUi Ybg`]b'X]Y'dc`h]gW\Yb : Ø\fi b[

9]b'k Y]hYfYg'VYgcf[b]gYffY[YbXYg'9f[YVb]g'nY][hž'XUgg'g]YVYb
j cb'nY\ b'6YZfU[hYb'_Y]b'J YfhfUi Yb`]b'X]Y'DfÀg]XYbh]b'\UVYb"
8]YgYg'A]gghfUi Yb`]gh'i bhYf'VYgh]a a hYb'; fi ddYbž'Y]bgW\`Y»`]W\
A YbgW\Yb'ØVYf'(\$'gck]Y']b`ÀbX`]W\Yb'; YV]YhYbž'VYgcbXYfg'ghUf_
Ui g[YdfÀ[h"⊕'6Yni ['Ui ZX]Yb'?cb[fYgg'Ài »Yfb'* - 'i 'XYf
6YZfU[hYb'k Yb]['V]g_`Y]b'J YfhfUi Yb`]b'X]Y'5V[YcfXbYhYb"

6fY]hY'5V`Y\bi b['XYf'F Y[]Yfi b[gdc`h]_

8Yf' l ba i h[Y\h'gc'k Y]hž'XUgg'- \$'i 'XYf'6Øf[Yf'X]Y'5a hgZØ\fi b[
j cb'6c`i UfhY'_f]h]g]YfYb" : ÆfY'Ni gh]a a i b[gk YfhY'g]bX'Ui Z
VYgW\Y]XYbY'*'i '[YZU`Yb/Y]b'U'Ufa]YfYbXYg'G][bU`ZØf'X]Y
ni _ØbZh][Y'dc`h]gW\Y'GhUV]]hÀh'XYg'@UbXYg"8]YgY'G_Ydg]g'k]fX
bcW\ j YfghÀf_h'Xi fW\`X]Y'bYi ghYb'8UhYb'ni a
l bUV\Àb[][_Y]hghU[ž'k c'bi f') &'i 'XYf'6Øf[Yf'XUg'cZZ]n]Y`Y
GhUUhgUb[YVch'Yfbgh\UZ]j YfZc`[h'\UVYb"8]Y'A Y\ſY]h'XYf
Ni \ØfYf'k Uf'i bni Zf]YXYb'a]h'XYb'VY\UbXY'hYb'H\Ya Yb'XYg
5b`UggYg"

8]Y `B c hk YbX][_Y]h'ZØf`J YfÀbXYfi b[Yb

⇒ `5bVYhfUW h`X]YgYf`9f[YVb]ggY`k]fX`XYi h`]Wž`XUgg`gck c\``XYf
DfÅg]XYbh`U`g`Ui W`XYf`?cb[fYgg`Xf]b[YbXYb`<UbX`i b[gVYXUfZ
\UVYbž`i a`XUg`J YfhfUi Yb`XYf`6Øf[Yf`ni fØW`ni [Yk]bbYb`i bX`X]Y
Gh]a a`i b[Yb`]b`XYf`6Yj Ò`_Yfi b[`ni `j YfVYggYfb``5`g
YbhgW`Y]XYbXY` : U`hc`fYb`_ÒbbhYb`a Y`f`HfUbgdUfYbnž
A]h[YghU`hi b[ga Ò[`]W`_Y]hYb`i bX`Y]b`k U`f`UZh][Yf`8]U`c[`a]h
XYb`6Øf[Yfb`Zi b[]YfYb``C`bY`[fi bX`Y[YbXY`5bdUggi b[Yb`i bX
5bhk cfhYb`Ui ZX]Y`6YXYb`_Yb`XYf`6Yj Ò`_Yfi b[`k]fX`XYf`dc`]h]gW`Y
FØW`_U`h`k Y]hYf`g]b`_Yb``

8 YhU]`g

6Ygi W`Yb`G]Y`i bg`Ui Z.`X]Y!bUW`f]W`hYb``bYh