

: 7 'Gh" 'DUi `]j g" ' < Y]XYb \Y]a . '8i Y`` 'XYf
g]Y[fY]W\Yb 'HYghgd]Y`!6]`Ub nYb

Gh" 'DUi `]g`YfghYf'; Y[bYf' < Y]XYb \Y]a [`Àbnh'a]h'dYfZY_hYf
HYghgd]Y`!J cfVYfY]hi b[. '5``Y 'ZØbZ'Gd]Y`Y' [Yk cbbYbž'Ui W\
[Y[Yb`]bhYfbUh]cbU`Y`Hcd!HYUa g"

⇒ a : i » VU``]gh'X]Y`J cfVYfY]hi b[`Ui Z'X]Y`GU]gcb`YbhgW\Y]XYbXž'i bX
gck c``XYf': 7 'Gh" 'DUi `]`U`g`Ui W\`XYf'%"': 7 < Y]XYb \Y]a ` \UVYb
]\fY`HYghgd]Y`!DYfZcfa UbW'g]b`XYf`U_hi Y``Yb`Gca a YfdYf]cXY
[Yg]W\Yfh"K À\fybX`Gh" 'DUi `]`a]h`j]Yf`G]Y[Yb`Ui g`ZØbZ
: fYi bXgW\UZhggd]Y`Yb`VYY]bXfi W_hž` \Uh< Y]XYb \Y]a `gc[Uf`U``Y
gY]bY`A UhW\Yg[Yk cbbYbž`k Ug`Ui ZY]bYb`VYY]bXfi W_YbXYb
J cfVYfY]hi b[gnY]hfUi a ` \]bk Y]gh"

< Y]XYb \Y]a g`8ca]bUb n`]b`XYf`J cfVYfY]hi b[

8Yf'%"': 7 < Y]XYb \Y]a žXYf`]b`XYf`j Yf[Ub[YbYb`GU]gcb`U`g
5i ZghY][Yf`]b`X]Y`6i bXYg][U`[]b[ž` \Uh'gY]bY`J cfVYfY]hi b[gd\UgY
a]h`6fUj ci f`[Ya Y]ghYfh"8 Ug`HYUa `Yfn]Y`hY`VYa Yf_Ybgk YfhY
9f[YVb]ggY`[Y[Yb`5a UhYi fa UbbgW\UZhYb`k]Y`B Uhn`f%) . \$Łi bX
GWk ÀV]gW` < U``fl . %Ł"8]YgY` \c` \Yb`G]Y[Y`gW\Y]bYb`XUfUi Z
 \]bni k Y]gYbž`XUgg`X]Y`A UbbgW\UZh'g]W\`b]W`h`bi f`Ui Z'X]Y`bYi Yb
< YfUi gZcfXYfi b[Yb`]b`XYf`@][U`j cfVYfY]hYhž`gcbXYfb`Ui W\
GY`Vghj YfhfUi Yb`hUb_h"8]Y`Gd]Y`Yf` \UVYb`ni XYa `XfY]
Ubgdfi W\gj c``YfY`Gd]Y`Y' [Y[Yb`]bhYfbUh]cbU`Y`?`i Vg`YfZc`[fY]W\
VYghfY]hYb`_ØbbYbž`XUfi bhYf`Y]b`%.\$!G]Y[` [Y[Yb`XUg`]hU`]Yb]gW\Y
HYUa `DUfa U"

8Yf`6`]W_`Ui Z`Gh" 'DUi `]g`J cfVYfY]hi b[

5i W\XYf': 7 'Gh" 'DUi `]` \Uh'a]h`j]Yf`G]Y[Yb`i bX`bi f`Y]bYf

B]YXYf`U[Yž[Y[Yb ; fYi h\Yf: Øfh\`f%.' Łž`Y]bY`d cg]hj Y`6]`Ubn
j cfni k Y]gYb"8]YgY`9fZc`[Y`g]bX`k]W\h][ži a `g]W\`cdh]a U`Ui ZX]Y
UbghY\YbXY`6i bXYg`][U!GU]gcb`j cfni VYfY]hYb" `ϕgVYgcbXYfY`XUg
[Yk cbbYbY`Gd]Y`[Y[Yb ; Y[bYfž`X]Y`VYfY]hg`]b`XYf`@[U`YhUV`]Yfh
g]bXž`nY][hž`XUgg`X]Y`?]Yn_]W_Yf`Ui Z`Y]bYa ` [i hYb`K Y[`gY]b
_ØbbhYbž`i a `g]W`]b`XYf`bYi Yb`GU]gcb`ni `VY\Ui dhYb"

8]Y`6YXYi hi b[`X]YgYf`HYghgd]Y`Y`ZØf`X]Y
_ca a YbXY`GU]gcb

8]Y`HYghgd]Y`Y`g]bX`b]W\h`bi f`Y]bY`A Ø[`]W`_Y]hž`X]Y`:]hbYgg`ni
Yf\Ø\Ybž`gcbXYfb`Ui W\ž`i a `X]Y`HYUa W\Ya]Y`i bX`HU_h]_ni
Ybhk]W_Y`b"8]Y`d cg]hj Yb`9f[YVb]ggY`VY]XYf`A UbbgW\UZhYb
_ØbbhYb`Y]b`ϕX]_Uhc f`ZØf`X]Y`GhÅf`_Y`XYf`HYUa `g`]b`XYf
_ca a YbXYb`GU]gcb`gY]b"5i W`k Ybb`HYghgd]Y`Yf[YVb]ggY`cZi`U`g
k Yb][`Ui ggU[Y`_fÅZh][` [Y`hYbž`gW\UZZYb`g]Y`XcW`Y]bY`[Yk]ggY
9fk Ufhi b[g\U`hi b[`i bX`_ØbbYb`gck c`\`Gd]Y`Yf`U`g`Ui W`:` Ub g
a chj]YfYb"

K Ug`Yfk UfhYh`X]Y` : Ub g3

A]h`Y]bYa `5i ZhU_hgd]Y`[Y[Yb`<Y]XYb\Y]a `ghY`h`g]W\`ZØf`Gh"DUi `]
Ui W`X]Y` : fU[Yž`k]Y`g]Y`g]W\` [Y[Yb`Y]b`gc` [i h`j cfVYfY]hYhYg`HYUa
VY\Ui dhYb`_ØbbYb"8Yf` : c_i `g`]Y[h`b]W\h`bi f`Ui Z`XYf
HYUa `Y]ghi b[ž`gcbXYfb`Ui W`Ui Z`XYa `]bX]j]Xi Y`Yb
Gd]Y`j YfghÅbXb]g`XYf`Gd]Y`Yf" `ϕ`XYf`6i bXYg`][U`k]fX`XYf`8fi W_
XYi h`]W\`Ø\Yf`gY]bž`i bX`X]Y`9f[YVb]ggY`XYf`J cfVYfY]hi b[`k YfXYb
gW\bY`j Yf[YggYb`gY]bž`k Ybb`Yg`i a `Di b_hY`[Y\h"

: Un]h

8]Y`V]g\Yf][Yb`HYghgd]Y`fYgi `hUhY`VY]XYf`A UbbgW\UZhYb`g]bX
j]Y`j YfgdfYW\YbX`i bX`UggYb`Ui Z`Y]bY`gdUbbYbXY`GU]gcb`\cZZYb"
: Ub g`i bX`5bU`mghYb`k YfXYb`g]W\Yf`[YgdUbbh`j YfZc`[Ybž`k]Y`g]W\
X]Y`HYUa `g`ni `6Y[]bb`XYf`bYi Yb`6i bXYg`][U!Gd]Y`nY]h`VY\Ui dhYb
_ØbbYb"8]Y`J cfVYfY]hi b[gd\UgY`_ØbbhY`]b`X]YgYa `ϕ\ f
YbhgW\Y]XYbX`XUZØf`gY]bž`k]Y`[i h`g]W\`X]Y`A UbbgW\UZhYb`]b`XYb

_ca a YbXYb`A cbUhYb`Ybhk]W_Y`b`i bX`UbdUggYb`k YfXYb"

8YhU]`g

6Ygi W\Yb`G]Y`i bg`Ui Z.`b!U["XY