? fYZY`Xg`? i `hi fdYf`Y. `7UZÅ`GØX`]W h`i bX
gc n]U`Y`Dfc ^Y`\_hY`]a `: c`_i g

9fZU\fyb`G]Y`a Y\f`ØVYf`XUg`\_i `hi fY`Y`7UZÅ`GØX`]W hž`Y]b
GW i `fUbnYbdfc`^Y`\_h`XYf`7Uf]hUg`i bX`X]Y`I bhYfghØhni b[`ZØf`
k c\bi b[g`cgY`: fUi Yb`]b`? fYZY`X"

⇒ a `<YfnYb`j cb`? fYZY`X`Yf\YVh`g]W`XUg` 7UZÅ`GØX`]W h`YfbYi h
Ui g`XYf`J YfgYb`\_i b[ "BUW`Y]bYf`\_i fnYb`GW`Y» i b[ `]gh`XUg
VY`]YVhY`7UZÅž`XUg`b]W h`bi f`ZØf`gY]bYb`Ui g[YnY]W bYhYb`? UZZYž
gcbXYfb`Ui W`ZØf`gY]b`_i `hi fY`Yg`5b[ YVch`VY`Ubbh`]ghž`Yhnh
k]YXYf`cZZb`"8]Y`VY]XYb`A]hUfVY]hYfž`<Y]bn`B]g[Yg`i bX`FY]bYf
6fUi W`\_cZZ`\UVYb`g]W`XYf`5i Z[ UVY`j YfgW`f]YVYbž`XUg`7UZÅ`ni
Y]bYa`"YVYbX][ Yb`Cfh`XYf`6Y[Y[bi b[`ni`a UW`Yb`"<]Yf`\_ca`a h
b]W h`bi f`XYf`; Ybi gg`j cb`? Øgh`]W`\_Y]hYb`Ui ZXYb`H]gW`ž`gcbXYfb
Ui W`?i bgh`i bX`?i `hi f`k YfXYb`[fc» [YgW`f]YVYb"

K]f`\UVYb`XUg`7UZÅ`a]h`XYa`; YXUb`\_Yb`YfØZZb`Yhž`XUgg`Yg`Y]b`Cfh
ZØf`U`Y`A YbgW`Yb`gY]b`gc`hYž`i a`]b`YbhgdUbbhYf`5ha`cgd`\ÄfY
ni gUa`a Ybni`_ca`a Yb`ž`Yf`_Äfh`B]g[ Ygž`k`Ä`fYbX`6fUi W`_cZZ
Yf[Äbnhž`XUgg`VYgcbXYfY`J YfUbgH`hi b[Yb`i bX`Dfc[fUa`a Y
[Yd`Ubh`gY]Ybž`i a`XYb`\_i `hi fY`Yb`5i ghUi gW`ni`ZØfXYfb`"8]YgY
⇒]h]Uhj`Yb`\UVYb`XUg`7UZÅ`ni`Y]bYa`i bj`Yfn]W`hVUfYb`HY`"XYf
? fYZY`XYf`; Ya`Y]bgW`UZh[Ya`UW`h`6Ygi W`Yf`\_ØbbYb`g]W`Ui Z
j YfgW`]YXYbY`9j Ybhg`ZfYi Ybž`X]Y`j cb`@Ygi b[Yb`V]g`\]b`ni
?i bghUi gghY`i b[ Yb`fY]W`Yb"

I bhYfghØhni b[`ZØf`:`Ua`_]`Yb.
GW i `fUbnYbdfc`^Y`_h

9]b`k`Y]hYfYg`gdUbbYbXYg`H\Ya`Už`XUg`]b`XYf`U`_hi`Y`Yb`5i`g[UVY
j`cb`? fYZY`X`A]I`VY`UbXY`h`k`]fXž`]gh`XUg`GW i `fUbnYbdfc`^Y`\_h`XYf`

7 Uf]hUg'? fYZY`X" A cXYfUhc f`F c`Z: fUb [ Yb`gdf]W h'a]h`J YfhfY hYfb
XYf`C f[ Ub]gUh]cb`ØVYf`X]Y`< YfUi gZcfXYfi b[Ybž`a ]h`XYbYb
: Ua]`Yb`_cbZfc b]Yfh`g]bXž`k Ybb`i\`fY`? ]bXYf`]b`X]Y`YfghY`?`UggY
_ca a Yb" `9]bY`9]bgW i`i b[ `_Ubb`ZØf`j]Y`Y: Ua ]`Yb`Y]bY
Z]bUbn]Y`Y`6Y`Ughi b[ `j cb`V]g`ni`) \$\$`9i fc`VYXYi hYbž`k Ug`]b
gW k]Yf][Yb`NY]hYb`Y]bY`YW hY`< ØfXY`XUfghY`h"

8 i fW `XUg`GW i`fUbnY bdfc`Y`\_h'a ØW hY`X]Y`7 Uf]hUg`X]YgYb
: Ua]`Yb`[Yn]Y`h`i bhYf`X]Y`5fa Y`[ fY]ZYb" `N]Y`]gh`Ygž
GW i`a UhYf]U`]Yb`i bX`F UbnYb`VYfY]hni ghY`Ybž`XUa ]h`XYf`GhUfh`]bg
GW i`YVYb`ZØf`X]Y`?]bXYf`i bVYgW k Yfh`V`Y]Vh" K ]f`k c`Yb
g]W YfghY`Ybž`XUgg`\_Y]b`?]bX`k Y[ Yb`ZY`\`YbXYf`A UhYf]U`]Yb
Ui g[YgW`cggYb`k]fX`ž`VYhc b`h`Y]b`J YfhfY hYf`XYf`7 Uf]hUg" `8]Y
=b]h]Uh]j Y`ghØ» h`Ui Z[fc» Yg`dcg]h]j Yg`9W c`i bX`nY][hž`k ]Y`k]W h][
Yg`]b`XYf`\`Yi h][Yb`NY]h`]ghž`gc`XUf]gW`a ]hY]bUbXYf`i a ni [Y`Yb"

9]b`g]W YfYf`< UZYb`ZØf`k c`b i b[ g`cgY
: fUi Yb

K A`fYbX`? fYZY`Xg`7 UZ`\_i`hi f`i bX`?]bXYfdfc`Y`_hY`]a`J cfXYf[fi bX
ghY`Ybž`[]Vh`Yg`Ui W`Y]bYb`k]W h][Yb`GYfj ]W ž`XYf`cZ`ØVYfgY`Yb
k]fX`Y]bY`9]b]W h`i b[ ž`X]Y`gdYn]Y`ZØf`k c`b i b[g`cgY: fUi Yb
[YgW UZYb`k i fXY" `A Ufh]bU`9W`Yfgž: YgW`ZhgZØ`fYf]b`XYg
Gcn]U`X]YbghYg`_Uh`c`]gW Yf: fUi Yb`? fYZY`Xž`\Uh]b`XYf`GYbXi b[
Y]bY`Y]bZØ`\gUa Y`GW`]XYfi b[`ØVYf`X]Y`6YXYi hi b[ `X]YgYf
5b`Ui ZghY`Y`[ Y[ YVYb" `: fUi Ybž`X]Y`Ui Z`XYf`GhfU» Y`YVYbž`Z]bXYb
\`Yf`b]W h`bi f`Y]b`8 UW`ØVYf`XYa`? cdZž`gcbXYfb`Ui W
l bhYfghØhni b[`i bX`<]`ZY`]b`gW k ]Yf][ Yb`@YVYbg`U[Yb"

K]W h][`]ghž`XUgg`k ]f`X]YgYb: fUi Yb`F ØW`_U`h`[YVYb`i bX`]bYb
\`Y`ZYbž`Y]bY`bYi Y`DYfgdY`_h]j Y`ZØf`]\`f`@YVYb`ni`Z]bXYb`ž`Yf`\_`Àfh
9W`Yfg" `8]Y`5fVY]h`XYf`9]b]W h`i b[`]gh`YbhgW Y]XYbXž`i a`XYb
VYhfcZYbYb: fUi Yb`b]W h`bi f`VY]`XYf`6Yk`À`h][ i b[ `U`\_i`hYf
DfcV`Ya Y`ni`Y`ZYbž`gcbXYfb`Ui W`ž`i a`]\`bYb`Y]bYb`K Y[`ni`fØW`
]b`X]Y: YgY`gW UZ`h`ni`YVbYb" `5i W`\`Yf`nY][ h`g]W ž`k ]Y`k]W h][
9b[U[Ya Yb`h`i bX`gc n]U`Y`J YfUbhk`cfhi b[`]b`? fYZY`X`g]bX"

9]bV`]W\_`]b`XUg`j`]Y`gY]h][`Y`9b[`U[`Ya`Ybh`]b
? fYZY`X

8]Y`6Yf]W`hY`Ui`g`XYa` `7UZÅ`GØX`]W`h`ž`XYa` `GW`i` `fUbnYbdfc`Y`_h
XYf`7Uf]hUg`i`bX`XYf`9]bf]W`hi`b[`ZØf`k`c`\\bi`b[`g`cgY`:`fUi`Yb
j`YfXYi`h]W`Ybž`XUgg`? fYZY`X`Y]b`C`fh`]ghž`Ub`XYa` `i` `hi`fY`Y`i`bX
gcn]U`Y`J`YfU`bhk`c`fhi`b[`<`UbX`]b`<`UbX`[`Y`\\Yb``8]Y`ϕ]h]Uh]j`Yb
nY][`Ybž`k`]Y`k`]W`h][`Y`g`]ghž`ZØfY]bUbXYf`XU`ni`gY]b`i`bX
[`Ya`Y]bgUa` `@Øgi`b[`Yb`ZØf`U`\_hi`Y`Y`<`YfUi`gZcfXYfi`b[`Yb`ni`Z]bXYb"
K`Å`fYbX`XUg`7UZÅ`k`Y]hYf`\\]b`Y]b`C`fh`XYf`6Y[`Y[`bi`b[`V`Y]Vhž
_ØbbYb`Dfc`Y`\_hY`k`]Y`X]Y`I`bhYfghØhni`b[`j`cb`:`Ua`j]Yb`cXYf`XUg
5b[`YVchi`ZØf`k`c`\\bi`b[`g`cgY`:`fUi`Yb`dcg]h]j`Yb`9]bZi`gg`Ui`Z`X]Y
;`Ya`Y]bgW`UZh`\\UVYb"

8Ug`9b[`U[`Ya`Ybh`XYf`A`YbgW`Yb`]b`? fYZY`X`]gh]j`cfV]`X`]W`i`bX
gYhnh`A`U»`gh`ÅVY`ZØf`X]Y`Ni`_i`bZh``8]Y`ϕ]h]Uh]j`Yb`V]YhYb`b]W`h`bi`f
I`bhYfghØhni`b[`ž`gcbXYfb`ZØfXYfb`Ui`W`XYb`gcn]U`Yb
Ni`gUa`a`Yb`\\U`hi`bX`X]Y`_i` `hi`fY`Y`J`]Y`ZU`h`XYf`GhUXh"

7UZÅ`GØX`]W`h.`9]b`\_i` `hi`fY`Y`f`HfYZZdi`b`_h

8Ug`7UZÅ`GØX`]W`h` `\\Uh`g]W`b]W`h`bi`f`U`g`C`fh`XYg
? UZZY[`Ybi`ggYg`YhUV`]Yfhž`gcbXYfb`Ui`W`U`g`_i` `hi`fY`Y`f`HfYZZdi`b`_h
]b`? fYZY`X``<`]Yf`Z]bXYb`fY[`Y`a`Å»][`J`YfU`bghU`hi`b[`Yb`ghU`hž`X]Y`j`cb
?i`bghUi`gghY`i`b[`Yb`ØVYf`@Ygi`b[`Yb`V]g`\\]b`ni` `A`i`g]_UVYbXYb
fY]W`Yb``8]YgY`J`YfU`bghU`hi`b[`Yb`ZØfXYfb`b]W`h`bi`f`X]Y`c`_U`Y
?i`bghgnYbYž`gcbXYfb`gW`UZZYb`Ui`W`Y]bYb`F`Ui`a`ZØf`5i`ghUi`gW
i`bX`;`Ya`Y]bgW`UZh`i`bhYf`XYb`6Ygi`W`Yfb``Gc`W`Y`C`fhY`g]bX
VYgcbXYfg`k`]W`h][`ZØf`XUg`gcn]U`Y`@YVYb`]b`Y]bYf`GhUXhž`XU`g]Y
XYb`A`YbgW`Yb`X]Y`A`Ø[`]W`_Y]h`V]YhYbž`g]W`ni`j`YfbYhYb`i`bX
bYi`Y`DYfgdY`\_h]j`Yb`ni` `[`Yk`]bbYb"

8]Y`F`Y`Yj`Ubn`XYg`7UZÅ`GØX`]W`h`]b`XYf`? fYZY`XYf
?i` `hi`f`UbXgW`UZh`_Ubb`b]W`h`\\c`W`[`Ybi`[`Y]b[`YgW`Åhnh`k`YfXYb``ϕ
Y]bYf`NY]hž]b`XYf`7UZÅ`g`c`Zhibi`f`U`g`C`fhY`XYg`gW`bY`Yb`?cbgi`a`g
k`U`f[`Ybca`a`Yb`k`YfXYbž`\\YVh`g]W`XUg`7UZÅ`Xi`fW`gY]b
j`]Y`ZÅ`h][`Yg`5b[`YVchi`bX`9b[`U[`Ya`Ybh`ZØf`X]Y`c`\_U`Y

; Ya Y]bgW\UZh\Yfj cf" ðXYa 'Yg'?i bghi bX'?i 'hi f'ZØfXYfhž'hfÀ[h
Yg'ni f'6YfY]WYfi b['XYg'GhUXh'VYbg'VY]'i bX'gdf]W h'A YbgWYb
j YfgW]YXYbYf'5'hYfg[fi ddYb'i bX'ðhYfYggYb'Ub"

Gcn]U`Y`Dfc`Y`_hY`]b`? fYZY`X. `I bhYfghØhni b[
ZØf` : Ua `]`Yb

8 Ug`GW`i`fUbnYbdfc`Y`\_h`XYf` 7Uf]hUg` `? fYZY`X`]gh`Y]b`6Y]gd]Y`ZØf
X]Y`k`]W`h][ Y`5fVY]hž`X]Y`]a`6YfY]W`XYf`gc]U`Yb`I bhYfghØhni b[
[Y`Y]ghYh`k`]fX`"8]Y`9]bgW`i`i`b[`]`cb`9fgh`_`Àgg`Yfb`ghY`h`ZØf`j`]Y`Y
: Ua `]`Yb`Y]b`Y`Z]bUbn]Y`Y`6Y`Ughi`b[ `XUf`"8`i`fW`gW`b]h`]W`i`[YVYb
: Ua `]`Yb`V]g`ni` `) \$`\$`9i`fc`Ui`gž`i`a`X]Y`b`ch`k`Yb`X][Yb
GW`i`a`UhYf]U`]Yb`ni`VYgc`f[ Yb`"A`]h`XYa`GW`i`fUbnYbdfc`Y`_h
gc`Yb`VYXØfZh][Y` : Ua `]`Yb`Yb`h`UghYh`k`YfXYbž`]bXYa`g]Y`Yb`h`k`YXYf
X]fY`\_h`I bhYfghØhni b[`Yf`U`h`Yb`c`XYf`Ni` [Ub[`ni`i`[YY][bYhYb
F Yggci fW`b`Yf`U`h`Yb"

N]Y`gc`W`Yf`Dfc`Y`_hY`]gh`Ygž`7`U`b`W`b[ `Y]W`X`Y]h`ni`ZØfXYfb`i`bX
g]W`Yfni`ghY`Ybž`XUgg`U`Y`?`]bXYf`i`b[YUW`hYh`]\fYf`Z]bUbn]Y`Yb
G]hi`Uh]cb`X]Y`[ `Y]W`Yb`6]X`i`b[gfYggci fW`b`ni`f`J`YfZØ[ i`b[`U`V`Yb`"
8Yf`6YXUfZ`Ub`gc`W`Yb`<`]ZgUb[ YV`chYb`k`ÀW`ghž`]bgVYgc`bXYfY`]b
k`]fhgW`UZh]W`X`YfUi`g[ YZc`fXYfYb`NY]hYbž`]b`XYbYb` : Ua `]`Yb`i`bhYf
Z]bUbn]Y`Yb`8`fi`W`\_`[YfUhYb`"8]Y` 7Uf]hUg` `? fYZY`X`g]Y`h`g]W`X`U`Yf
]b`XYf`J`YfUb`h`c`f`hi`b[ž`U`_`h]j`<`]ZY`ni`Y`]ghYb`i`bX` : Ua `]`Yb`ni
i`bhYfghØhnybž`XUa`]h`XYf`GW`i`ghUf`h`ZØf`U`Y`?`]bXYf`d`c`g]h]j
[YghU`hYh`k`YfXYb`_`Ubb"

I bhYfghØhni b[`ZØf`k`c` \`bi`b[g`c`gY` : fUi`Yb`Y]b
? fYZY`X

? fYZY`X`U`h`a`]h`XYf`9]b]W`hi`b[ `ZØf`k`c` \`bi`b[ g`c`gY` : fUi`Yb`Y]bY
k`]W`h][Y`5b`Ui`ZghY`Y`[ YgW`UZZYbž`X]Y`[Yn]Y`h`Ui`ZX]Y`6YXØfZb]ggY
X]YgYf`j`i`b`YfUV`Yb` ; fi`ddY`Y]b[Y`h`"A`Ufh]bU`9W`\_Yfg`Yf`Ài`hYfh`X]Y
<YfUi`gZc`fXYfi`b[ Ybž`a`]h`XYbYb`k`c` \`bi`b[ g`c`gY` : fUi`Yb` \`Ài`Z][
_`cb`Zfcb]h]Yfh]g]bXž`XUfi`bhYf`dgmW]gW`Y`6Y`Ughi`b[ Ybž`gc]U`Y
=gc`Uh]cb`i`bX`XYf`A`Ub[Y`U`b`g]W`YfY`a`K`c` \`bfUi`a`"8]YgY
9]b]W`hi`b[`V]YhYh`b]W`h`i`b`i`bhYf`_i`b`Zž`gcbXYfb`Ui`W`

6YfUhi b[gX]YbghY`Ubž`X]Y`XYb` : fUi Yb` \Y`ZYb`gc`Ybž`k]YXYf
=hY[fUh]cbga Ò[`]W\_X]hYb`]b`X]Y` ; YgY`gW UZhini `Z]bXYb"

8]Y`Bc h k YbX][ \_Y]h`Y]bYf`gdYn]U`]g]YfhYb`9]bf]W`hi b[`ZØf` : fUi Yb
nY][h`g]W`]b`XYb`XYa` c[ fUZ]gW`Yb`l` bhYfgW` ]YXYb`]b`XYf
C V X U W `c g][ \_Y]h` GhUh]gh]_Yb`XYi` hYhYb`XUfUi`Z` ]bž`XUgg` : fUi Yb`c`Zh
UbXYfg`VYhfc`ZYb`g]bX`U`g`A`À`b`Yfž` \`Ài` Z][`Ui`Z`gdYn]Z]gW`Y
l` bhYfgh`hni` b[ `Ub[Yk` ]YgYb`g]bX`i` bX` ]b`j` ]Y`Yb` : À`Yb`j`cb` ; Yk`U`h
cXYf`A`]ggVfUi` W`VYhfc`ZYb`g]bX`"8`U`Yf`]gh`XUg`9b[U[Ya`Yb`h`XYg
Gcn]U`X]Ybgh`_Uh`c`]gW`Yf` : fUi Yb`?fYZY`X` ]cb`Yb`hgW`Y]XYbXYf
6YXYi`hi` b[ž`i`a` `X]YgYb` : fUi Yb`b]W`h`bi`f`Y]bYb`d` \mg]gW`Yb`F`Ui`a`ž
gcbXYfb`Ui`W` <c`Zbi` b[ `i`bX`DYfgdY`\_h]j`Yb`ni` `V]YhYb"

8YhU]`g

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