8 fYgXYb. 'A]_fcY`Y_hfcb]_ 'Vcca h' %\$"\$\$\$ 'bYi Y 'æVg']b 'G]W h°

8 fYgXYb'gYhnh'a]h'XYa 'GdUhYbgh]W'ZØf'9GA 7 'bYi Y 'a di `gY
]b'XYf'A]_fcY`Y\_hfcb]\_ 'i bX'gW UZzh'Ui gYbXY'5fVY]hgd`ÀhnY"

⇒ 8 fYgXYb'k]fX'XYfnY]h'Y]b'VYXYi hYbXYg'? Ud]hY`ZØf'X]Y
A]_fcY`Y_hfcb]_VfUbW'Y'Ui Z[YgW'U[Yb"8]Y'GhUXhž'X]Y'VYfY]hg
gY]h%- *%Y]bY'GW'ØggY'fc`Y`]b'XYf'9fZc'fgW'i b['i bX'9b'hk]W_`i b[
j cb'< U`V`Y]hYfb'gd]Y'hž'k]fX'Xi fW'Y]bY'FY]\Y'j cb'bYi Yb
⇒ j Ygh]h]cbYb'i bX'Dfc'Y_hYb']b'XYf'< U`V`Y]hYf]bXi ghf]Y
Ui Z[Yk YfhYh"6YgcbXYfg'\Yfj cfni \YVYb']gh'X]Y'5bg]YX'i b['XYg
9GA 7 'f9i fcdYUb'G]W'cb'A Ubi ZUWhi f]b['7ca dUmž'X]Y'U'g
k]W'h][Yf'GW'f]h'ni f'9fk Y]hYfi b['XYf'DfcXi _h]cbg_UdUn]h`hYb
Ub[YgY\Yb'k]fX"

I bhYf'XYb'5i [Yb'XYf'2 ZYb'h]W'Y]h'i bX'XYf'J YfUb'k cfh]W'Yb'\Uh
X]Y'GhUXh]b'XYb`YhnhYb'æ\ fYb'Y]bY'VYY]bXfi W_YbXY
HfUb'gZc'fa Uh]cb'Xi fW'Ui ZYb"8]Y'< U`V`Y]hYfVfUbW'Y']gh'Yhnh'Y]b
j]Y'Y'Ui gYbXY'A YbgW'Yb'VYgW'ÀZh][YbXYf'GY_hcf']b'8 fYgXYbž
a]h'ØVYf'+\$"\$\$\$'5b[YghY`hYbž'X]Y]b'XYf'FY[ ]cb'h`h]['g]bX'i bX
YXYb'Xf]hYb'A]_fcW'd']b'9i fcdU'\YfghY`Yb"8]Y'ghUf_Y
'cbnYbhfUh]cb'Ub':]fa Yb'i bX': UW'_f`ZhYb'\Uh'X]Y'GhUXh'ni 'Y]bYa
VYXYi hYbXYb'< chgdch'ZØf']bbcj Uh]j Y'HYW'bc`c[]Yb'[Ya UW'h"

GhUXh]bj Ygh]h]cbYb'i bX

⇒ ZfUghfi _hi fYb'hk]W_`i b[

8]Y'@UbXYg\Ui dhghUXh'8 fYgXYb'\Uh'g]W'ni a 'N]Y`'[YgYhnhž'X]Y
Ubg'Àgg][Yb'I bhYfbY\ a Yb'XYf'< U`V`Y]hYf]bXi ghf]Y'ni 'i bhYfgh'ØhnYb
i bX'['Y]W'nY]h]['Ui Z'X]Y'g]W'j Yf'ÀbXYfbXYb'6YXØfZb]ggY'XYf
6fUbW'Y'ni 'fYU[]YfYb"⇒ X]YgYa '?cbhYi h'Z]Y» Yb'Yf\YV`]W'Y

:]bUbna]hhY`b`X]Y`ghAXh]gWXY`ϕZfUghfi`\_hi`f`A`h`i` bhYfghØhni`b`[
XYg`:`fY]ghUUhg`GUW`gYb`k`YfXYb`a`Y`fYfY`k`]W`h][`Y`Dfc`Y`_hY`ni`f`
9f\Ø\i`b`[`XYf`@YVYbgei`U`]h`h`i`b`X`XYf`K`]fhgW`UZh]W`\_Y]h`b`XYf`
F`Y`[`]cb`fYU`]g]Yfh"

Ni`XYb`[`Yd`UbhYb`ϕZfUghfi`_hi`fYb`hk`]W`_i`b`[`Yb`n`A`\`Yb`Y]b`b`Yi`Yg`
I`a`gdUbbk`Yf`_ž`Y]b`:`i`ggk`UggYfk`Yf`\_i`b`X`Y]b`a`c`XYfb`Yg`
5V`k`UggYfgmghYa`"8`YgY`9]b]f]W`hi`b`[`Yb`k`YfXYb`Yb`hgW`Y]XYb`X`
XU`ZØf`gY]b`ž`i`a`g]W`Yfni`ghY`Yb`ž`XUgg`X]Y`i`bhYfb`Y`a`Yb`]a`
8fYgXbYf`B`cfXYb`a`]h`Ghfca`ž`K`UggYf`i`b`X`XYf`b`Øh][`Yb`
5V`k`UggYfYb`hgcf`[`i`b`[`Y`ZZ]n]Yb`h`j`Yfgcf`[`h`k`YfXYb`"8`Ua`]h`k`[`f`X`b]W`h`
bi`f`X]Y`5`hhfU`\_h]j`]h`h`X`Yg`Gh`Ub`Xc`fhg`Yf\Ø\h`ž`gc`b`XYfb`Ui`W`X]Y`
6Ug]g`ZØf`ni`\_Ø`b`Zh][`Y`9b`[`U`[`Ya`Yb`hg`]b`XYf`A`]\_fc`Y`Y`_hfc`b`_`k`Y]hYf`
[`Y`gh`f`_`h"

K`UW`gh`i`a`gd`fc`[`bc`g`Y`b`i`b`X`f`Y`[`]cb`U`Y` 6`Y`X`Y`i`h`i`b`[`

A`h`X`Y`b`i`Ui`Z`Y`b`X`Y`b`ϕ`j`Y`gh]h]cb`Y`b`]b`X`Y`<`U`V`Y]hY`fV`f`Ub`W`Y`]b`
8`f`Y`g`X`Y`b`k`]f`X`Y`fk`U`fh`Y`h`ž`X`U`gg`V]g`ni``%`\$`\$`\$`\$`b`Yi`Y`5`f`V`Y]hgd`A`hnY`]b`
X`Y`b`\_`ca`a`Y`b`X`Y`b`ϕ`Y`f`Y`b`[`Y`g`W`U`Z`Y`b`k`Y`f`X`Y`b`"8`]Y`g`Y`d`c`g]h]j`Y`
9`b`hk`]W`_i`b`[`X`Y`i`h`Y`h`Ui`Z`X`U`g`U`b`U`h`Y`b`X`Y`K`U`W`gh`i`a`i`b`X`X]Y`\`c`\Y`
K`Y`hh`V`Y`k`Y`f`V`g`Z`A`][`\_Y]h`X`Y`f`F`Y`[`]cb`\]b`"8`]Y`5`bg]Y`X`i`b`[`X`Y`g`9`GA`7`
k`Ø`f`X`Y`b]W`h`bi`f`X]Y`D`fc`Xi`\_h]cb`g`U`d`Un]h`h`Y`b`Y`f\Ø\Y`b`ž`gc`b`XYfb`
Ui`W`X`U`ni`V`Y]h`f`U`[`Y`b`ž`X`Y`b`G`h`Ub`X`c`fh`8`f`Y`g`X`Y`b`k`Y]h`Y`f`]b`U`g`
N`Y`b`h`fi`a`X`Y`f`A`]_fc`Y`Y`\_hfc`b`\_]b`9`i`f`c`d`U`ni`d`c`g]h]cb]Y`f`Y`b"

9]b`n`Y`b`hf`U`Y`f`:`U`_`hc`f`ZØf`X`Y`b`9`f`Zc`[`X`Y`f`6`f`Ub`W`Y`]b`8`f`Y`g`X`Y`b`]gh`X]Y`
j`c`gh`A`b`X][`Y`K`Y`fhg`W`Ø`d`Z`b`[`g`\_`Y`hhY`j`c`f`C`fh`"8`]Y`g`Y`i`a`Z`U`gg`h`
:`c`f`g`W`i`b`[`i`b`X`9`b`hk`]W`\_i`b`[`ž`Y]b`Y`J]Y`n`U`\`U`b`Ni`Y`Z`Y`f`Y`b`g`ck`]Y`
a`c`X`Y`fb`ghY`D`fc`Xi`\_h]cb`g`U`b`U`[`Y`b`"8`]Y`Y`b`[`Y`J`Y`fb`Y`hni`b`[`nk`]g`W`Y`b`
X]Y`g`Y`b`5`\_h`Yi`f`Y`b`Y`fa`Ø`[`W`h`Y]b`Y`b`g`W`b`Y`Y`b`5`i`gh`Ui`g`W`
]b`bc`j`U`h]j`Y`f`ϕ`Y`Y`b`i`b`X`H`Y`W`bc`c`[`]Y`b`ž`k`U`g`ZØf`X]Y`6`f`Ub`W`Y`
i`b`Y`f`À`gg`]W`_]gh"

8]Y`G`h`U`X`h`8`f`Y`g`X`Y`b`j`Y`f`Zc`[`h`Y]b`Y`\_`U`f`Y`G`h`f`U`h`Y`[`]Y`ž`i`a`X]Y`
V`Y`b`Ø`h][`h`Y`ϕ`ZfUghfi`\_hi`f`ZØf`X`Y`b`<`U`V`Y]hY`fg`Y`\_`hc`f`Ui`gni`V`Ui`Y`b`i`b`X`
X`U`a`]h`X]Y`j`c`gh`A`b`X][`Y`K`Y`fhg`W`Ø`d`Z`b`[`j`c`f`C`fh`ni`[`Y`k`A`\`f`Y]gh`Y`b`"

8]YgYf'5bgUhn'_0bbhY'U`g'A cXY`Z0f'UbXYfY'FY[]cbYb'X]YbYbž'X]Y
]\fY']bXi ghf]Y`Yb'? UdUn]hÀhYb'YVYbZU`g'Yf\0\Yb'a 0W hYb"

8]Y'5bZAb[Y'XYf'<U'V'Y]hYfZc f gW i b[]b'8 fYgXYb'ghY\Yb']b
X]fY_hYa 'Ni gUa a Yb\Ub['a]h'XYf'D]cb]YfUfVY]h] c b
<U'V'Y]hYfd\mg]_Yf'K YfbYf'<Ufha Ubbž'XYf']a 'ž\ f' %- * %Y]bY'XYf
YfghYb': c f gW i b[gghÀhYb']bg'@YVYb'f]YZ''8]YgY'\]ghc f]gW Y
DfÀ[i b['\Uh'V]g'\Yi hY'bUW [Yk]f_h'i bX']gh'Y]b'k]W h][Yf'HY]'XYf
→Yb h]hÀh'XYf'GhUXh"

9]b'6`]W_]b'X]Y'Ni _i bZh

8]Y'Zc fhk À\ fYbXYb' ðj Ygh]h]cbYb'i bX'9bhk]W_]b[Yb']a '6YfY]W
XYf'A]_fcY`Y_hfc b]_]b'8 fYgXYb'nY][Ybž'XUgg'X]Y'FY[]cb'VYfY]h]gh
Z0f'X]Y'<YfUi gZc fXYfi b[Yb'XYf'Ni _i bZh''8]Y'GW UZI b['bYi Yf
5fVY]hgd`ÀhnY'i bX'X]Y'GhÀf_i b['XYf' ðZfUghfi _hi f'g]bX'b]W h'bi f
Z0f'X]Y'Ub gÀgg][Yb' l bhYfbY\ a Yb'j cb'6YXYi hi b[ž'gcbXYfb'Ui W
Z0f'X]Y'[YgUa hY'K]fhgW UZh'g_fUZh'XYf'GhUXh'A]h'Y]bYf'Yb[U[]YfhYb
GhUXh] Yfk U'hi b[ž]bbc j Uh]j Yb' l bhYfbY\ a Yb' i bX'Y]bYa '_UfYb
: c_i g'Ui ZhYW bc`c[]gW Y'9bhk]W_]b[Yb'ghY\h'8 fYgXYb'Ub'XYf
GW k Y`Y'ni 'Y]bYf'bYi Yb'Y'fU'XYf'A ]\_fcY`Y_hfc b]_"

→a 'FUa Yb'XYf'9bhk]W_]b[Yb']b'XYf'A]_fcY`Y_hfc b]_'\Uh'X]Y
GhUXh'8 fYgXYb'b]W h'bi f']\fY'Dcg]h]cb']bbYf\U'V'8Yi hgW`UbXg
[YZgh][hž'gcbXYfb'ghY`h'Ui W'Y]bYb'VYXYi hYbXYb'? bchYbdi b_h
]b'XYf'Yi fcdÀ]gW Yb'<U'V'Y]hYf]bXi ghf]Y'XUf''9]b'YbhgW Y]XYbXYf
: U_hc f'\]YfVY]'g]bX'X]Y': c f gW i b[g]bgh]hi h]cbYbž'XUfi bhYf'X]Y
HYW b]gW Y' l b]j Yfg]hÀh'8 fYgXYb'i bX'XUg': fUi b\cZYf' ðgh]hi h'Z0f
9'Y_hfc b]gW Y'BUbcgmghYa Y'9B5Gž'X]Y]bbc j Uh]j Y'HYW bc`c[]Yb
i bX'BUW k i W gZUW_fÀZhY'\Yfj c fVf]b[Yb''8]YgY' ðgh]hi h]cbYb
hfU[Yb'XUni 'VY]ž'XUgg'8 fYgXYb'U'g'Y]b'NYbhfi a 'Z0f'HU'YbhY'i bX
: c f gW i b['ja '6YfY]W 'A]_fcY`Y_hfc b]_[']h"

→b'XYf'Ni gUa a YbUfVY]h'nk]gW Yb' l bhYfbY\ a Yb' i bX
l b]j Yfg]hÀhYb'k]fX'gdYn]U`g]YfhY': c f gW i b['[YZ0fXYfhž'X]Y'h]YZ]b
XYb']bXi ghf]Y`Yb'6YXUfZY]b[fY]Zh''8]YgY'GmbYf[]Yb'\Y'ZYb'Ui W
XUVY]ž'dfU_h]gW Y'9fZU\fi b[Yb'Z0f'Ghi X]YfYbXY'i bX'Y]bYb
X]fY_hYb'Ni [Ub['ni ': UW_fÀZhYb'Z0f' l bhYfbY\ a Yb'ni 'gW UZYb"

⊖j Ygh]h]cbYb`i bX`9bhk]W_`i b[

8]Y`⊖j Ygh]h]cbYb`i]b`X]Y`⊖ZfUghfi _hi f`i bX`X]Y`GWUZZI b[ `bYi Yf
HYWkbc`c[ ]Yb`g]bX`b]Wk`h`bi f`Ui Z8fYgXYb`VY[ fYb`nhž`gcbXYfb
ghY`Yb`Y]bYb`HY]`XYf`[ YgUa`hXYi hgWkYb`GhfUhY[ ]Y`XUfž`i a`X]Y
Yi fcdÀ]gWkY`<U`V`Y]hYfdfcXi \_h]cb`ni`ghÀf`Yb``8]Y
6i bXYgfY[]Yfi b[`U`h]a`F`U`a`Yb`XYf` 7`]\dglGhfUhY[]Y
nU`fY]WkY` : ÒfXYfdfc[fUa`a`Y`]bg`@YVYb`[ Yfi ZYbž`X]Y`XUfUi Z
UVn]Y`Ybž`X]Y`Y]a`]gWkY`<U`V`Y]hYf]bXi ghf]Y`ni`i bhYfghØhnYb`i bX
ni`X][ ]hU`]g]YfYb``8]YgY`Dfc[ fUa`a`Y`VY]b`U`hYb`gck`c`Z]bUbn]Y`Y
5bfY]nY`ZØf` : cfgWk`i b[ `i bX`9bhk ]W\_`i b[`U`g`Ui Wk`A`U`bU`a`Yb`ni`f
GWUZZI b[`bYi Yf`DfcXi _h]cbg`UdUn]hÀhYb`

9]b`\_cb\_fYhYg`6Y]gd]Y`]gh`XUg`⊖j Ygh]h]cbgdfc[ fUa`a` 8][ ]hU`
X`hnh`ž`XUg`_Y]bYb`i bX`a` ]hY`ghÀbX]gWkYb`i bhYfbY`a`Yb
Z]bUbn]Y`Y`i bhYfghØhni b[`V]YhYhž`i a`]\fY`8][]hU`]g]Yfi b[
j`cfUbni`hfY]VYb`i bX`bYi`Y`HYWkbc`c[ ]Yb`ni`]a`d`Ya`Ybh]YfYb`
Gc`WkY`⊖]h]Uh]j`Yb`hfU[Yb`XUni`VY]ž`X]Y`K`YhhVYk`YfVgZÀ\][]Y]h`XYf
XYi hgWkYb`<U`V`Y]hYf]bXi ghf]Y`ni`g]WkYfb`i bX`[ `Y]WknY]h][`bYi`Y
5fVY]hgd`ÀhnY`ni`gWkUZZYb`

; `cVU`Y`HfYbXg`]b`XYf`<U`V`Y]hYf]bXi ghf]Y

8]Y`<U`V`Y]hYf]bXi ghf]Y`ghY`h`k`Y`hk`Y]hj`cf`[ fc`Yb
<YfUi`gZcfXYfi b[ Ybž`X]Y`gck`c`X`i`fWk`[Ycdc`]h]gWkY`GdUbbi b[Yb
U`g`Ui Wk`Xi`fWk`ni`bY`a`YbXY`@]YZfYb[ dÀggY`]b`XYf`[`cVU`Yb
JYfgcf[i b[g`YhhY`VYX]b[h]g]bX``@Ui`h`Y]bYa`6Yf]Wk`hj`cb
GhUh]ghU`k`]fX`XYf`[`cVU`Y`<U`V`Y]hYfa`Uf`h`V]g`&\$&)
j`cfUi`gg]Wk`h]Wk`Y]bYb`K`Yfh]j`cb`ØVYf`\*`\$\$`A`]`UfXYb`i`G!8c`Uf
YffY]WkYb``8]YgY`Dfc[ bcgY`i`bhYfghfY]Wk`h`X]Y`6YXYi`hi`b[`Y]bYf
fcVi`ghYb`i`bX`X]j`Yfg]Z]n]YfhYb`DfcXi _h]cbg`UbXgWkUZZž`X]Y`]b
GhÀXhYb`k`]Y`8fYgXYb`[YZØfXYfh`k`]fX`

8]Y`B`chk`YbX][ ]Y]hž`bUWk`U`h][Y`i`bX`YZZ]n]YbhY
DfcXi _h]cbga`Yh`cXYb`ni`Ybhk`]W\_Y`bž`k`]fX`Ui`Wk`j`cb`XYf
ni`bY`a`YbXYb`BUWkZfU[Y`bUWk`F`YbYk`UV`Y`9bYf[mi`bX
bUWk`U`h][Yb`HYWkbc`c[]Yb`VYY]bZi`ggh`i`bhYfbY`a`Yb`]b`8fYgXYb
]bj`Ygh]YfYb`XU`Yf`Ui`Wk`]b[fØbY`HYWkbc`c[]Ybž`i`a`XYb

Ö_c`c[ ]gWYb : i » UVXfi W\_`XYf`<U`V`Y]hYfdfcXi \_h]cb`ni `fYXi n]YfYb
i bX`[ `Y]WnY]h][`XYb `5bZcfXYfi b[Yb`XYg`A Uf_hYg`[ YfYW`h`ni
k YfXYb"

8YhU]`g

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