

› [YbX`]W\ Y`]b`6]Y`YZY`X.`6Yhfi b_Yb`i bX
U[[fYgg]j `]a `< Ui dhVU\ b\cZ

6i bXYgdc`nY]`6]Y`YZY`X`b]a a h`nk Y]`U`_c`c`g]YfhY`A`AXWYb
]b` ; Yk U\fgUa ""5i gY]bUbXYfgYhni b[`i bX`5bnY][Yb`[Y[Yb
X]Y`%) !`Å\ f][Y"

6]Y`YZY`X`f`c`hgk`

5a `8]YbghU[UVYbXž`XYb`&\$""5i [i ghž`fØW`hY`X]Y`6i bXYgdc`nY]`]a
< Ui dhVU\ b\cZ`6]Y`YZY`X`Ui gž`bUW\XYa `g]Y`j`cb`nk Y]
U`_c`c`g]YfhYb`A`AXWYb`U`Ufa `]Yfh`k`i`fXY""8]Y`%(!`i`bX
%) !`Å\ f][Yb`k`UfYb`]b`Y]bYa `Ni ghUbXž`XYf`Yg`b`c`hk`YbX][`a`UW`hY`ž
g]Y`]b` ; Yk U\fgUa `ni`b`Y`a`Yb""`b`XYf`ZfØ`Yb`5VYbXghi`bXY`gW\]Yb
Ygž`U`g`c`v`Yg`g]W\`i`a`Y]bY`c`_U`Y`B`ch`U[Y`\UbXY`hY`ž`XU`9`hYfb
U`Ufa `]Yfh`k`YfXYb`a`i`gghYbž`i`a`ZØf`X]Y`G]W\Yf\Y]h`XYf`?`]bXYf`ni
gc f[Yb"

8]Y`6i bXYgdc`n]ghYbž`X]Y`Ua `J`YfUbghU`hi`b[gc`fh`Y]b`hfUZ`Ybž
ghY`h`Yb`gW`bY`Z`Yghž`XUgg`X]Y`VY]XYb`š`[YbX`]W\Yb`ghUf`_
VYhfi b_Yb`k`UfYb""8]YgY`A`U»`bU\`a`Y`i`bhYfghfY]W\`h`X]Y`k`]W\h][Yb
5i`Z[UVYb`XYf`6i bXYgdc`nY]ž`b]W\`h`b`i`f`]b`6Yni`[`Ui`ZX]Y
9f\U`hi`b[`XYf`ØZYb`h]W\Yb`c`fXbi`b[ž`gcbXYfb`Ui`W\`]\bg]W\h]W\
XYg`GW`i`h`nYg`i`↑`b[Yf`A`Yb`gW\Yb`]b`_f]h]gW\Yb`G]hi`Uh]cbYb"

9fY][b]ggY`]a `8YhU]`

K`Å\`fYbX`X]Y`%(!`Å\`f][Yž`bUW\`Y]bYa `i`fnYb`5i`ZYbh\U`h`Ui`Z`XYf
Dc`nY]k`UW`Y`ž`gW`bY`j`cb`]\`fYf`A`i`hhYf`UV[Y\`c`h`k`i`fXY`ž`\]Y`h`Yb
g]W\`X]Y`8]b[Y`VY]`XYf`%) !`Å\`f][Yb`_ca`d`n]YfhYf""G]Y`k`UfhYhY
c`ZYbVUf`i`b[YXi`X][ž`k`Ug`ni`Y]bYa `f]h]gW\Yb`J`c`fZU`ZØ\`fhY.`5`g
g]Y`]b`Y]bYb`DUd]Yf`_c`fV`i`f]b]YfYb`k`c`h`hY`ž`[f]ZY]b`6i bXYgdc`n]gh

Y]bži a ']\f'J Yf\U`hYb`ni`i bhYfV]bXYb"

⊕`Y]bYf`\YZh][Yb`FYU_h]cb`gW`i [`X]Y`A]bXYf`Å\`f][Y`XYa
6YUa hYb`Y]bY`C`fZY][Y`i bX`gW`UZhY`Yg`gc [Ufž`\a`X]Y`6f]`Y`j ca
?cdZ`ni`gW`U[Yb`"8]Y`G]hi Uh]cb`k`i fXY`gW`bY`"Ub [YgdUbbhž`U`g
j Yfgi W`hYž`k`Y]hYfY`GW`Å [Y`UVni`k`Y`fYb`"@YmhYbX`]W`k`i fXY`X]Y
%)!`Å\`f][Y`a`]hY]bYf`GhfUZUbny][Y`k`Y [Yb`h`h`]W`Yb`5b [f]Zg`Ui`Z
J`c`ghfYW`i b [gVYUa hY`a`i bX`hc`h [Ya`UW`hi`bX`Ub`]\`fY`9`hYfb
ØVYf [YVYb`"8]Yg`nY][hž`XUgg`X]Y`9bhZYfbi b [`j`cb`ž [YbX`]W`Yb`Ui`g
_f]h]gW`Yb`G]hi Uh]cbYb`b]W`h`bi`f`ZØf`XYfYb`G]W`Yf\Y]hž`gcbXYfb
Ui`W`ZØf`X]Y`⊕hY [f]h`h`j`cb`Dc`nY]`i bX`UbXYfYb`6YUa hYb`j`cb
\ØW`ghYf`6YXYi`hi`b [`]gh"

A ch]j Y`i bX`<]bhYf [fØbXY

C V`Yg`g]W`VY]`XYa`J`Yf\U`hYb`XYf`VY]XYb`A`ÅXW`Yb`i`a`Y]bY
FYU_h]cb`Ui`Z`XYb`8fi`W`_`UbXY`hž`XYf`a`]h`XYa`9bXY`XYf
Gca`a`YfZYf]Yb`Y]b\Yf [Y`hž`V`Y]Vh`ZfU [`]W`"A`Ø [`]W`Yfk`Y]gY
gd]Y`hYb`Ui`W`UbXYfY`:`U`hc`fYb`]b`]\`fYa`J`Yf\U`hYb`Y]bY`F`c`Y`ž`X]Y
Y`Xc`W`b]W`h`b`Å`Yf`VY`Yi`W`hY`h`k`YfXYb`_`c`b`b`hYb`"8]Y`ž [YbXnY]h
_Ubb`Ya`ch]cbU`Ui`Z [Y`UXYb`i`bX`j`Yfk`]ffYbX`gY]bži`bX`gc`W
]a`di`g]j`Yg`J`Yf\U`hYb`_Ubb`c`Zi`Ui`g`GhfYggž`@Ub [Yk`Y]`Y`c`XYf`XYa
;`YZØ`X`Yg`5i`g [Y`Y]ZYfhgY]bg`fYgi`h]YfYb"

8]Y`Dc`nY]`VY`hc`b`hž`XUgg`X]Yg`_Y]bY`]gc`YfhY`9d]gcXY`]ghž`gcbXYfb
HY]`Y]bYg` [fØ»`YfYb`DfcV`Ya`gž`XUg`XYb
j`YfU`b`h`k`c`f`hi`b [gVYk`i`gghYb`l`a [Ub [`a`]h`5`_`c`c`i`bhYf
ž [YbX`]W`Yb`VYhf]Zh`Gc`W`Y`J`cfZ`Å`Y`k`YfZYb`:`fU [Yb`Ui`Z`X]Y`ØVYf
]bX]j`]Xi`Y`Y`<`UbX`i`b [Yb`]\]bUi`g [Y`Yb`i`bX`X]Y`F`c`Y`b`j`cb
9fn]Y`i`b [`i`bX` [YgY`gW`UZh]W`Yb`9fk`Ufhi`b [Yb`]\]bhYfZfU [Yb`"
K`Å`fYbX`Y`hYf`]W`Y`5i`Zg]W`h`k`]W`h] [`]ghž`a`i`gg`Ui`W`XUg`gc`n]U`Y
l`a`Z`X`j`cb`ž [YbX`]W`Yb`j`Yfgh`Å`f`h`VYhfUW`hY`h`k`YfXYb`ži`a
Å`b`]W`Y`G]hi Uh]cbYb`]b`Ni`_i`b`Zi`ni`j`Yfa`Y]XYb"

;`Ygd`f`ÅW`gghc`Z]gh`Ui`W`X]Y`:`fU [Yž`k`]Y` [i`h`ØZY`bh]W`Y
J`Yf`_`Y`f`ga`]hY`Z`ZØf`X]Y`G]W`Yf\Y]h]j`cb`ž [YbX`]W`Yb` [YY][bYh`g]bXž
]bgVYgc`bXYfY`Ua`9bXY`Y]bYg`Ub [Yb`HU [Yg`"8]Y`B`chk`YbX] [_Y]h
Y]bYf`VYggYfYb`5i`Z`_`Åfi`b [`i`bX`Df`Åj`Yb]h] UfVY]h`VYnØ [`]W`

5`_c\c`a]ggVfUi W`VYgcbXYfg`i bhYf`đ [YbX`]WYb`k]fX`]a a Yf
Xf]b[`]WYf"8 UVY]`_Ubb`5i Z_`Àfi b[`ØVYf
j YfUbhk cfhi b[gVYk i gghYb`?cbgi a`i bX`X]Y` ; YZU\ fYb`j cb
5`_c\c`XUni `VY]hfU[Ybž`XYfUfh][Y`J cfZÀ`Y`ni`j Yf\]bXYfb"

⇒ Y]bYf`K Y`hž]b`XYf`?]bXYf`i bX`đ [YbX`]WY`]a a Yf`a Y\ f
A Ò[`]W_`Y]hYb`i bX` : fY]\Y]hYb`\ UVYbž`]gh`Yg`YbhgWY`]XYbXž`XUgg
g]Y`]b`Y]bYa`g]WYfYb`i bX`i bhYfghØhnYbXYb`i a ZY`X`Ui Zk UWgYb
_ÒbbYb"8]Y`6]Y`YZY`XYf`6i bXYgdc`]nY]` \Uh`a`]h`]\fYa`9]b[fY]ZYb
]b`X]YgYf`G]hi Uh]cb`Y]b`k]W]h[Yg`NY]WYb`[YgYhnh`8]Y`G]WYf\Y]h
↑ b[Yf`A YbgWYb`\Uh`J cffUb[ži bX`j YfUbhk cfhi b[gVYk i gghYg
< UbXY`b`]gh`b]W`h`bi`f`Y]bY`DZ]W`hž`gcbXYfb`Ui W`Y`]bY
Bchk YbX][_Y]h"

9]bV`]W_`]b`< YfUi gZcfXYfi b[Yb`]a
ÒZZYbh`]WYb`FUi a

8]Y` ; YgWY\`b]ggY`]b`6]Y`YZY`X`k YfZYb`Y]b`@]W`h`Ui Z`X]Y
< YfUi gZcfXYfi b[Ybž`a`]h`XYbYb`Dc`]nY]`i bX`↑ b[Y`A YbgWYb`]b
ÒZZYbh`]WYb`F`Ài a Yb`_cbZfcbh]Yfh]g]bX"9g`]ghi bYf`Àgg`]W`ž`XUgg
gck c`\`X]Y`6Y\`ØfXYb`U`g`Ui W`X]Y` ; Ya`Y]bgWUZh`Ub`Y]bYa
GhfUb[`n]Y\Ybž`i a`XUg`F]g]_c`[YZÀ`f`]WYf`G]hi Uh]cbYb`ni
a]b]a]YfYb`i bX`[`Y]W`nY]h][`XYb`GW`i`hn`j`cb`A]bXYf`À`f][Yb`ni
[Yk`À`f`Y]ghYb"

9]b`gh`Àf`_YfYg`6Yk`i`gghgY]b`ZØf`X]Y`DfcV`Ya`Uh]_`XYg
5`_c\c`a]ggVfUi W`g`VY]`đ [YbX`]WYb`_ÒbbhY`\Y`ZYbž`_ØbZh][Y
5i Z[UVYb`XYf`Dc`]nY]`bcW`VYggYf`j`cfni [fY]ZYb"8Gc`_ÒbbhY`Y]bY
j Yfgh`Àf`_hY`Df`AgYbn`j`cb`gcn]U`Yb`9]bf]W`hi`b[Yb`Ui W`XUni
VY]hfU[Ybž`XUgg`g]W`gc`WY`J`cfZÀ`Y`gY`hYbYf`k]YXYf`c`Yb" ⇒
YXYa` : U`V`Y]Vh`UVni`k`UfhYbž`k]Y`X]Y`GhUXhi`bX`X]Y`Dc`]nY]`Ui`Z
X]Y`J`cfZÀ`Y`fYU[]YfYb`i bX`k`Y`WY`A`U»`bU`a`Yb`g]Y`ni`_ØbZh][
Yf[fY]ZYb`k`YfXYbž`i`a`X]Y`G]WYf\Y]h]a`ÒZZYbh`]WYb`FUi a`ZØf
U`Y`5`hYfg[fi`ddYb`ni`[Yk`À`f`Y]ghYb"

8]Y`F`c`Y`XYf`6i bXYgdc`]nY]`i bX
Df`Àj`Ybh]cbga`U»`bU`a`Yb

8]Y'6i bXYgdc`nY]gd]Y`h`Y]bY`k YgYbh`WXY`F c``Y`]b`XYf`G]WXYf\Y]h
i bX`CfXbi b[`Ub`6U\b\ÖZyb`i bX`]b`UbXYfYb
JYf_Y\fgY]bf]W`hi b[Yb`]b`8Yi hgW`UbX`"G]Y`]gh`b]W`h`bi f`ZØf`X]Y
6Y_Äa dZ b[`j cb`?f]a]bU`]h`Ähi bX`X]Y`?cbhfc``Y`XYf
; fYbng]WXYf\Y]h`ni gh`ÄbX][ž`gcbXYfb`Ui W`ZØf`XYb`GW`i hn`j cb
A]bXYf`Ä\`f][Ybž`]bgVYgcbXYfY`]b`G]hi Uh]cbYbž`X]Y`5`_c`c`!`cXYf
8fc[Yba]ggVfUi W`VYhfYZYb`" ð`XYb`YhnhYb`ð\`fYb`\Uh`X]Y
6i bXYgdc`nY]`X]j YfgY`Df`Äj Ybh]cbga U» bU`a Yb`]bg`@YVYb
[Yfi ZYbž`i a `ž [YbX`]WXYb`XYb`j YfUbhk cfhi b[gj`c``Yb`l a [Ub[
a]h`5`_c`c``bU\Yni Vf]b[Yb`"

Ni XYa `UfVY]hYh`X]Y`6i bXYgdc`nY]Yb[`a]h`GW`i `Yb`i bX`gc]U`Yb
9]bf]W`hi b[Yb`ni gUa`a Ybž`i a `5i Z_`Äfi b[gdfc[fUa`a Y
Ubni V]YhYb`"8]YgY`Dfc[fUa`a Y`n]Y`Yb`XUfUi Z`UVž`VY]`ž [YbX`]WXYb
Y]b`6Yk`i gghgY]b`ZØf`X]Y`; YZU`fYb`XYg`5`_c`c`_cbgi a`g`ni
gW`UZZYb`i bX`]b`Yb`U`hYfbUh]j Y`: fY]nY]ha`Ö[`]W`_Y]hYb`Ubni V]YhYb`"
Gc`WY`A U» bU`a Yb`]g]bX`VYgcbXYfg`k]W`h][`]b`NY]hYbž`]b`XYbYb
ž [YbX`]WXY`Xi fW`i [YgY`gW`UZh`]WXY`9]bZØggY`ghUf`_`a]h`XYa
H\Ya`U`5`_c`c``_cbZfcbh]Yfh`k YfXYb`"

F YW`h`]WXY`?`cbgYei YbnYb`i bX
J YfUbhk cfh`]W`_Y]hYb

8Yf`JcfZU``]a`6]Y`YZY`XYf`<Ui dhVU\b`cZk]fZh`Ui W`fYW`h`]WXY
: fU[Yb`Ui Z`"ð`8Yi hgW`UbX`g]bX`A]bXYf`Ä\`f][Y`bUW`X`Y`a
ž [YbXghfUZfYW`h`ni `VY`U`bXY`bž`k Y`W`Yg`Y]bYb`Yfn]Y`Yf]gW`Yb
5bgUhn`j YfZc`[h`6Y]`U`_c`c`VYX]b[hYb`GhfUZhUhYbž`k]Y`]b`X]YgYa
: U``XYa`h`Äh`]WXYb`5b[f]ZZ`Ui Z`J`c`ghfYW`_i b[gVYUa`hYž`k]fX`]b`XYf
FY[Y`ni Yfgh`Y]bY`9fn]Y`i b[ga U» bU`a Y`]b`6YhfUW`h`[Ync[Yb`"
8]YgY`_ÖbbYb`j cb`XYf`: Ua]`Yž`GW`i `Yb`cXYf`Gcn]U`X]YbghYb
j Yfa]hY`h`k YfXYb`i bX`n]Y`Yb`XUfUi Z`UVž`X]Y`ž [YbX`]WXYb`Ui g`XYf
; YZU`fYbncbY`ni `c`Yb`"

: Øf`X]Y`9`hYfb`VYghY`h`Y]bY`5i Zg]W`hgdZ]W`hž`i bX`g]Y`_ÖbbYb`ni f
J YfUbhk cfhi b[`[Ync[Yb`k YfXYbž`k Ybb`g]Y`X]YgYb`DZ]W`hYb`b]W`h
bUW`_ca`a Yb`"ð`gc`WXYb`: Ä`Yb`_ÖbbYb`Yhk U][Y`A U» bU`a Yb
j cb`XYf`9fn]Y`i b[gVY`ÖfXY`Ui W`U`g`b`ch`k YbX][`YfUW`hYh

k YfXYb"9gV`Y]VhUVni k UfhYbžk]Y`g]W`X]YgYf`J cfZU`fYW`h]W`
k Y]hYfYbhk]W_Y`h`i bX`k Y`W`Y`k Y]hYfYb`GW`f]hY`X]Y`ni gh`bX][Yb
6Y\ÖfXYb`i bhYfbY`a Yb`k YfXYb"

GhUh]gh]_Yb`ni a `5`_c`c`_cbgi a `i bhYf
đ [YbX`]W`Yb

5_hi Y`Y`GhUh]gh]_Yb`nY][Ybž`XUgg`5`_c`c`_cbgi a `VY]
đ [YbX`]W`Yb`bUW`k]Y`j cf`Y]b`Yf`YV`]W`Yg`DfcV`Ya `XUfghY`h"
@Ui h`Y]bYf`Gh`X]Y`XYf`6i bXYgnYbhfU`Y`ZÖf`[Ygi bX`Y]h`]W`Y
5i Z`Äfi b [`Ui g`XYa `đ\`f`&\$&`\UVYb`Yhk U`&(i `XYf
đ [YbX`]W`Yb`]a `5`hYf`j cb`%&`V]g`%+`đ\`fYb`a]bXYghYbg`Y]ba U`
]a `A cbUh`5`_c`c`_cbgi a]Yfh`8]Yg`]gh`Y]b`5bgh]Y[`]a `J Yf[`Y]W`
ni `XYb`J cf`U`fYb`i bX`k YW`h`6YXYb_Yb`\]bg]W`h]W`XYf
[Ygi bX`Y]h`]W`Yb`i bX`gcn]U`Yb`5i gk]f`_i b [Yb"

Ni g`Ähn`]W` []Vh`Yg`6YZÖfW`hi b [Yb`ØVYf`X]Y` ; YZU`fYb`XYg
: fY]nY]hU`_c`c`_cbgi a gž`]bgVYgcbXYfY`]b`gcn]U`Yb`i a [YVi b [Yb
k]Y`DUfhmg`cXYf`VY]: YghYb"8]Y` ; YZÄ`fXi b [`Xi fW`
5`_c`c`YI nYggY`i bX`X]Y`XUa]hj YfVi bXYbYb`F]g]_Yb`k]Y`i bZÄ`Yž
, VYf[f]ZY`cXYf`XUg`J Yf`U`hYb`]b`XYf`2 ZYbh`]W`_Y]h`ZÖ`fYb`ni
Y]bYa `Yf`\Ö`hYb`G]W`Yf`Y]hgVYXUfZ`gck c`\`ZÖf`X]Y`đ [YbX`]W`Yb
gY`Vgh`U`g`Ui W`ZÖf`X]Y` ; YgY`gW`UZh"

8YhU]`g

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