

8 Ybn`b[Yf'8 fi W_YfY]`ghUfhYh'a]h'bYi Yf < cW`Y]ghi b[ga UgW]bY`Xi fW

8 fi W_YfY]: i fhk Ab[`Yf`b'8 Ybn`b[Yb`]bj Ygh]Yfh`b`a cXYfbY
8 fi W_hYW`b]_ž'6Øf[Yfa Y]ghYf`<c`Ya Ubb`VYg]W`h][h'bYi Y
6c[YbcZZgYh!A UgW]bY"

⇒ 8 Ybn`b[Ybž`b`Y]bYf[fc» Yb`i bX`YV\UZhYb`8 fi W_YfY]ž`]ghYg
Y]bY`b]W`hni`ØVYfgY\YbXY`6Yk Y[i b[`]b`XYf`V]g\Yf`fi` \][Yb
8 fi W_VfUbW`Y"<]Yf`VYZ]bXYh`g]W`X]Y`8 fi W_YfY]: i fhk Ab[`Yf
; a V< / `7c"?; žX]Y`gY]h`bi ba Y\f`&*`'X\Yb`ZØf`XUg
GhUX]cba U[Un]b`XYg`G7`: fY]Vi f[`j YfUbhk`cfh`]W`]gh`8]Y
5ha cgd\`ÁfY`]b`XYf`<U`Y`k]fX`j cb`XYa` \Ufa`cb]gW`Yb`; Yf`Ai`gW
XYf`A UgW]bYb`i bX`XYa` `Y]b`UXYbXYb`8 i Zh`bUW`Zf]gW`Yf`H]b`hY
VYgh]a a hž`k`À\fybX`X]Y`A]hUfVY]hYf`Y]Zf][`a]h] YfgW]YXYbYb
DUd]YfvÒ[Yb`VYgW`ÀZh][h`g]bX"

6Y]`Y]bYa` `Øb[ghYb`6Ygi W`j cb`8 Ybn`b[Ybg`6Øf[Yfa Y]ghYf
A Uf`_i`g`<c`Ya Ubb`[UV`X]Y`; YgW`ÀZhgZØ\`fYf]b`; UV]: i fhk Ab[`Yf
]bhYfYggUbhY`9]bV`]W_Y`]b`X]Y`a cXYfbY`5i`gghUhi`b[`XYg
I`bhYfbY\`a`Ybg`8 Yf`6Øf[Yfa Y]ghYf`k`Uf`Y]b[Y`UXYb`k`cfXYbž`i`a
X]Y`bYi`Y`6c[YbcZZgYh!8 fi W_a UgW]bY`ni`VYg]W`h][Yb` `Y]bY
\cW`a cXYfbY`F Ud]XU`%\$`*`j`cb`?`cYb][/ `6Ui`Yf`8]YgYg`bYi`Y
; Yf`Áh`Vf]b[h`b]W`h`bi`f`Yf\YV`]W`Y`⇒j`Ygh]h]cbYb`a`]h`g]W`ž`gcbXYfb
Ui`W`Y]bY`g][b]Z]_UbhY`hYW`b]gW`Y`K`Y]hYfYb`hk`]W`_i`b[`]b`X]Y
8 fi W_YfY]"

9]bY`⇒bj Ygh]h]cb`]b`X]Y`Ni`_i`bZh`XYg`8 fi W_g

⇒a`A`U]`&\$&`VY[Ubb`i`bgYfY`F`Y]gY`]b`Y]bY`UbXYfY`8]a`Ybg]cb
XYg`8 fi W_g`ž`Yf`_`ÁfhY`: i fhk Ab[`Yf`j`c`Yf`6Y[Y]ghYfi`b[``8 Yf
I`a`gh]Y[`Ui`Z`X]Y`bYi`Y`A UgW]bY`ghY`h`ZØf`XUg

: Ua]Ybi bhYfbY\ a Yb`Y]bYb`VYXYi hYbXYb`GWf]hXUfz`XYf`a]h
nU\`fY]WXYb` , VYf`Y[i b[Yb`i bX`ϕj Ygh]h]cbYb`j YfVi bXYb`k Uf"
FY]bYf` : i fhk`Ab[`Yfz`XYf`6fi XYf`XYf` ; YgW`ÅZhgz\`fYf]bž`Yf[`AbnhYž
XUgg`U`Y]b`XUg` : i bXUa Ybh`Z0f`X]Y`8fi W_a UgW`]bY`]b`XYf`<U`Y
gdYn]Y``Yff]W`hYh`k YfXYb`a i gghYž`XU`XUg` ; Yf`Åh`Ybcfa`gW`k Yf
]gh`8Ug`bYi Y`A UgW`]bYba`cXY``k i fXY`]b`a Y\`fYfYb`HY`]Yb
Ub[Y`]YZYfh`i bX`]bbYf\U`V`j cb`bi`f`%(`HU[Yb`a`cbh]Yfh"

8]Y`9ZZ]n]Ybn`X]YgYf`A UgW`]bY`]gh`VYa Yf`_Ybgk Yfh`GY]h`đ` `]&\$&
`Ai Zh`XYf`8fi W_a]h`c\`Yf` ; YgW`k]bX][`_Y]h`i bX`Df`An]g]cb`` K]f
\UVYb`Yhnh`X]Y`A`0[`]W`_Y]hž`Ui ZDUd]Yf`]b`j YfgW`]XYbYb
: cfa UhYb`i bX` ; Yk]W`hYb`ni`Xfi W_Ybž`i bX`XUg`Ui Z`Y]bY
i a k Y`hž`fYi bX`]W`YfY`5fhi bX`K Y]gY`U`g`ni j cf`ž`Yf`Ai hYfhY`FY]bYf
: i fhk`Ab[`Yf``8]Y`NY]hYfgdUfb]g`]gh`VYgcbXYfg`VY`]XYf`DfcXi`_]cb
XYg`GhUX]cba U[Un]bg` <Y]a`gd]Y` `XYi h]W` . : f0\`Yf`VYb`0h][`hY`XUg
HYUa`Y`]bY`[`Ubny`BUW`h`Z0f`Y]bY`5i ZU[Yž`\`Yi hY`[Y\`h`XUg
XYi h]W`gW`bY``Yf` `]b`k`Yb][`Yb`Ghi`bXYb``8]YgY`9ZZ]n]Ybn`Z0\`fh`ni
[Yf]b[YfYb`9bYf[]Y`_cghYb`i bX`k`Yb][`Yf`5VZU``Xi`fW`A`U`_i`Uhi`fž
k Ug`XYf`BUW`\U`h][`_Y]h`XYg`i bhYfbY\ a Ybg`ni [i hY`_ca`a`h"

9]b`k`Y]hYfYf` ; fi bX`Z0f`X]Y`ϕj Ygh]h]cb`]gh`X]Y`Yfk`Y]hYfhY
5b[YV`chgdU`YhYž`X]Y`Yg`XYf`8fi W_YfY]`Yfa`0[`]W`hž`XYb
6YX0fZb]ggYb`] \`fYf`?i bXYb`VYggYf`[YfYW`h`ni`k`YfXYb``8]Yg`]gh
VYgcbXYfg`k]W`h][`]b`Y]bYf`6fUbW`Yž`X]Y`g]W`ghYh][`k`UbXY`hi`bX
UbdUggYb`a`i`gg"

6Ygi W`a]h`K`Y]hV`]W`_

60f[Yfa`Y]ghYf`<c``Ya`Ubb`bi`hnhY`gY]bYb`6Ygi W`ž`i`a`a`Y\`f`0VYf
X]Y` : cfhgW`f]hY`]b`XYf`8fi W_hYW`b]_`i`bX`X]Y`0_c`c[]gW`Yb
5gdY`_hY`XYf`bYi`Yb`A`UgW`]bYb`ni`YfZU\`fYb``9f`k`Uf`g]W`hVUf
VYY]bXfi W_h`j`cb`XYf`9i`dYfh]gY`i`bX`XYa`9b[U[Ya`Ybh`XYf
: i fhk`Ab[`Yfg`i`bX`] \`fYf`A`]hUfVY]hYbXYb``9g`]gh`Y]bZUW
VYY]bXfi W_YbX`ni`gY\`Ybž`k`]Y`j`]Y`ϕbcj`Uh]cbg[Y]gh`\`Yf`ni`Z]bXYb
]gh`ž`gU[hY`XYf`60f[Yfa`Y]ghYf`i`bX`[fUhi`]YfhY`XYb
:]fa`Yb]b\UVYfb`ni`] \`fYf`a`i`h][`Yb`9bhgW`Y]Xi`b["

<c``Ya`Ubb`gW`cgg`gY]bYb`6Ygi W`a]h`XYb`VYghYb`K`0bgW`Yb`Z0f`

X]Y`Ni _i bZh`XYg`l bhYfbY\`a Ybg`" 7\`UdYUi `<i h`UV`j cf`X]YgYf
k Y]hfY]W\YbXYb`i bX`a i h][Yb`-bj Ygh]h]cb`"=-W`k ØbgW\Y`XYf` :]fa U
: i fhk Åb[`Yf`k Y]hYf\`]b`j]Y`9fZc`[`a]h`XYf`bYi Yb`8 fi W_a UgW\]bY`
YZZ]n]Yb hY`5fVY]hgUV`Ài ZYž`Vf]`Ub hY`9f[YVb]ggY`i bX`ghYhg`Y]bY
ghUf`_Y`5i ZhfU[g`U[Y ž`VYa Yf`hY`Yf`Ub`Àgg`]W\`XYg`6Ygi W\g`

-Y]bYf`NY]hž`]b`XYf`j]Y`Y`l bhYfbY\`a Yb`j cf`<YfUi gZcfXYfi b[Yb
ghY\`Ybž`nY][h`X]Y`8 fi W_YfY]: i fhk Åb[`Yfž`XUgg`a]h`XYa `f]W\h][Yb
5bgUhn`i bX`XYa `K]`Yb`ni f`J YfÅbXYfi b[`Ui W\`]b`hfUX]h]cbY`Yb
6fUbW\Yb`bYi Y`7\`UbW\`b`Yb hghY\`Yb`_ØbbYb`"8]Y`-bj Ygh]h]cb`]b
HYW\bc`c`[]Y`i bX`B UW\`U`h][_Y]h`_ØbbhY`b]W\h`bi f`ZØf`X]Y
8 fi W_YfY]`gY`Vghž`gcbXYfb`Ui W\`ZØf`X]Y`A YX]Yb`UbXgW\UZh]j cf`C fh
j cb`[fc>Yf`6YXYi hi b[`gY]b`"

8]Y`6YXYi hi b[`a cXYfbYf`8 fi W_hYW\ b]_`ZØf` l bhYfbY\`a Yb

8]Y`-bj Ygh]h]cb`]b`a cXYfbY`8 fi W_a UgW\]bYb`k]Y`X]Y`F Ud]XU`%\$*
j cb`?cYb][/`6Ui Yf`\Uh`k Y]hfY]W\YbXY`5i gk]f`i b[Yb`Ui ZX]Y
8 fi W_]bXi ghf]Y`"l bhYfbY\`a Ybž`X]Y`]b`bYi Y`HYW\bc`c`[]Yb
]bj Ygh]YfYbž`_ØbbYb`b]W\h`bi f`]fY`DfcXi _h]cbg`UdUn]hÅhYb
Yf\`Ò\`Ybž`gcbXYfb`Ui W\`X]Y`E i U]hÅh`]fYf`DfcXi _hY`g][b]Z]_Ubh
j YfVYggYfb`"A]h`XYf`bYi YghYb`HYW\ b]_`g]bX`8 fi W_YfY]Yb`]b`XYf
@U[Yž`Y]bY`J]Y`nU\`j`j cb` : cfa UhYb`i bX` ; Yk]W\hYb`ni`j YfUfVY]hYbž
k Ug`]fY` : `Yi]V`]hÅh`i bX`K YhhVYk YfVgZÅ\][_Y]h`Ui Z`XYa `A Uf`_h
Yf\`Ò\`h`"

8 Ub`_XYf`j YfVYggYfhYb`9ZZ]n]Ybn`_ØbbYb`8 fi W_YfY]Yb`]fY
DfcXi _h]cbg`cghYb`gYb`_Yb`"8Yf`fYXi n]YfhY`Ghfca j YfVfUi W\`i bX
X]Y`[Yf]b[YfY`A U_i`Uhi f`hfU[Yb`XUni`VY]ž`XUgg`l bhYfbY\`a Yb
bUW\`U`h][Yf`UfVY]hYbž`k Ug`]b`XYf`\`Yi h][Yb`i a k Y`hVYk i gghYb
; YgY`gW\UZhY]b`Yb hghW\Y]XYbXYf`J cfhY]`]gh`"8]YgY`5gdY`_hY`g]bX
b]W\h`bi f`ZØf`X]Y`VYhf]YV`]W\Y`9ZZ]n]Ybn`k]W\h][ž`gcbXYfb`Ui W\`ZØf`
XUg`A Uf`_Yh]b[`i bX`X]Y`?i bXYbV]bXi b[ž`XU`ni bY\`a YbX`a Y\`f
l bhYfbY\`a Yb`Y]b`bUW\`U`h][Yg`<UbXY`b`XYa`cbghf]YfYb`k`c`Yb`"

-bbc j Uh]cbYb`]b`XYf`8 fi W_]bXi ghf]Y

8]Y`8fi W_VfUbWXY`Yf`YVh`XYfnY]h`Y]bYb`K UbXY`ž`XYf`b]W`h`bi`f
hY`W`b]gW`Y` `bcj Uh]cbYb`VYhf]Zhž`gcbXYfb`Ui W`b`Yi`Y
; YgW`À`ZhgdfU`_h]_Yb`i`bX`_i`bXYbcf]Ybh]YfhY`5bg`À`hnY`
HYW`bc`c[]Yb`k]Y`XUg`X][]hU`Y`8fi W`_Yb`i`bX`5i`hca`Uh]g]Yfi`b[
gd]Y`Yb`Y]bY`nYbhfU`Y`F`c`Y`VY]a`HfUbgZcfa`Uh]cbgdfcnYgg`XYf`
6fUbWXY`"8][]hU`Y`8fi W`_j`YfZU`fYb`Yfa`Ò[`]W`Yb`Y]bY`gW`bY`YfY`
DfcXi`_h]cb`j`cb`_Y]bYfYb`5i`ZU[Ybž`X]Y`ZØf`dYfgcbU`]g]YfhY`
A`Uf`_Yh]b[_Ua`dU[bYb`i`bX`a`U» [YgW`bY]XYfhY`DfcXi`_hY`
i`bYf`À`gg`]W`g]bX`"

Ni`XYa`k`]fX`X]Y` `bhY[fUh]cb`j`cb`8UhYbUbU`mgY`i`bX`
Gc`Zhk`UfY`Ògi`b[Yb`]a`a`Yf`VYXYi`hYbXYf`"8]YgY`HYW`bc`c[]Yb`
`Y`ZYb`8fi W`_YfY]Ybž`XYb`?i`bXYbVYXUfZ`VYggYf`ni`j`YfghY`Yb`i`bX`
YZZ]n]YbhYfY`DfcXi`_h]cbgUV`Ài`ZY`ni`]a`d`Ya`Ybh]YfYb`"Gc`_`ÒbbYb`
l`bhYfbY`a`Yb`b]W`h`bi`f`]\fY`5b[YVchY`dYfgcbU`]g]YfYbž`gcbXYfb`
Ui`W`]\fY`@U[Yf`U`hi`b[`cdh]a`]YfYbž`k`Ug`ni`i`[Yf]b[YfYb`?`cghYb`
i`bX`Y]bYf`VYggYfYb`?i`bXYbVYhfYi`i`b[`ZØ`fh`"

8`Yf`6Y]hfU[`ni`f`fY[]cbU`Yb`K`]fhgW`UZh`

8]Y`9bhgW`Y]Xi`b[`XYf`i`fhk`Àb[`Yf`i`a`V<`/`7c`"i`?;`ž]b`Y]bY`bYi`Y`
8fi W`_a`UgW`]bY`ni`]bj`Ygh]YfYbž`U`h`Ui`W`d`cg]h]j`Y`5i`gk`]f`_i`b[Yb`
Ui`ZX]Y`c`_U`Y`K`]fhgW`UZh]b`8Ybn`]b[Yb`"8i`fW`X]Y`GW`UZZ`b[`j`cb`
5fVY]hgd`À`hnYb`i`bX`X]Y`9f`Ò`i`b[`XYf`DfcXi`_h]cbg`_UdUn]h`À`hYb`
_Ubb`XUg`i`bhYfbY`a`Yb`a`Y`f`?i`bXYb`VYX]YbYbž`k`Ug`ni`i`Ò`YfYa`
l`a`gUhn`i`bX`a`Y`f`GhYi`YfY]bbU`a`Yb`ZØf`X]Y`i`Ya`Y]bXY`ZØ`fh`
@`_U`Y`l`bhYfbY`a`Yb`d`fcZ]h]YfYb`j`cb`XYf`Ni`gUa`a`YbUfVY]h`a`]h`
XYf`8fi W`_YfY]ž`gY]Yg`]b`i`cfa`j`cb`8]Ybgh`Y]ghi`b[Yb`cXYf`Xi`fW`
XYb`6Yni`[`j`cb`A`UhYf]U`"

Ni`XYa`i`U`h`Y]bY`Zcf]YfYbXY`8fi W`_]bXi`ghf]Y`XUg`DchYbn]U`ž`
_fYUh]j`Y`Dfc`Y`_hY`i`bX``bc]h]Uh]j`Yb`]b`XYf`F`Y[]cb`ni`ZØfXYfb`" `bc`
j`]Y`Yb`Gh`À`XhYb`g]bX`8fi W`_YfY]Yb`c`Zh`Yb[`a`]h`XYf`?i`bgh`i`bX`
?i`hi`fgnYbY`j`YfVi`bXYbž`]bXYa`g]Y`VY]gd]Y`gk`Y]gY`c`_U`Y`?`Øbgh`Yf`
i`bhYfgh`Ø`hnYb`cXYf`VY]j`YfUbg`h`hi`b[Yb`i`bX`5i`gghY`i`b[Yb`
a`]hUfVY]hYb`"Gc`W`Y`GmbYf[]Yb`hfU[Yb`ni`f`_i`hi`fY`Yb`j`]Y`ZU`hi`bX`
ni`a`k`]fhgW`UZh]W`Yb`K`UW`gh`a`XYf`F`Y[]cb`VY]"

5_hi Y`Y`< YfUi gZcfXYfi b[Yb`XYf
8 fi W_]bXi ghf]Y

Hfchn`XYf`d cg]h]j Yb`9bhk]W_`i b[Yb`ghY`h`X]Y`8 fi W_]bXi ghf]Y`Ui W
j cf`<YfUi gZcfXYfi b[Yb`"GhY][YbXY`Fc\ghcZdfY]gY`i bX`XYf
ni bY`a YbXY`Cb`]bY!`?cbgi a`k]f_Yb`g]W`bY[Uh]j`Ui ZX]Y
BUW`ZfU[Y`bUW`[YXfi W_hYb`A UhYf]U`]Yb`Ui g`"I bhYfbY`a Yb
a ØggYb`]bbcj Uh] Y`@Øgi b[Yb`Z]bXYbž`i a`a]h`X]YgYb
J Yf`ÅbXYfi b[Yb`i a ni [Y`Yb`"J]Y`Y`8 fi W_YfY]Yb`gYhnYb
]bnk]gW`Yb`Ui ZA`i`h]_UbU`!A Uf_Yh]b[ghfUhY[]Yb`i bX`V]YhYb
8]Ybgh`Y]ghi b[Yb`Ubž`X]Y`ØVYf`XUg`fY]bY`8 fi W_Yb`_]bUi g[Y`Ybž
i a`]\f`; YgW`ÅZnga cXY`ni`X]j Yfg]Z]n]YfYb"

Ni g`Åh`]W`]gh`X]Y`5bdUggi b[`Ub`U_hi Y`Y`I a`k Y`hgW`i hnf]W`h`]b]Yb
ZØf`j]Y`Y`I bhYfbY`a Yb`i bYf`Ågg`]W`"8Yf`8 fi W_`Ui Z`8 fi W_YfY]Ybž
bUW`U`h][Y`DfU_h]_Yb`ni`]a`d`Ya Ybh]YfYbž`k`ÅW`gh`ghYh]["
I bhYfbY`a Yb`a ØggYb`b]W`h`bi`f`HYW`bc`c[]Yb`]bhY[f]YfYbž`X]Y
XYb`Ø_c`c[]gW`Yb`i`»UVXfi W_`fYXi`n]YfYbž`gcbXYfb`Ui W
hfUbgdUfYb`hYf`ØVYf`]\fY`bUW`U`h][Yb`DfU_h]_Yb`_ca`a`i`b]n]YfYbž
i a`XUg`J YfhfUi Yb`]\fYf`?i bXYb`ni`[Yk`]bbYb"

8i fW`XYb`_cb]bi]Yf`]W`Yb`9]bgUhn`bYi Yf`HYW`bc`c[]Yb`i bX`XYb
: c_i`g`Ui ZBUW`U`h][_Y]h`_Ubb`X]Y`8 fi W_]bXi ghf]Y`YXcW
[Ygh`Åf`_h`Ui`g`X]YgYf`D`UgY`Y`Yfj`cf[Y`Yb`"8]Y`i`fhk`Åb[`Yf`; a`V<
/`7c`"?;`]gh`Y]b`6Y]gd]Y`XUZØfž`k]Y`Y]bY`n]Y`[Yf]W`hYhY`b]j`Ygh]h]cb
]b`a`cXYfbY`HYW`b]_`b]W`h`bi`f`XYb`6Yhf]YV`j`YfVYggYfhž`gcbXYfb
Ui W`_`Ub[Zf]gh][`X]Y`A`Uf`hdcg]h]cb`XYg`I`bhYfbY`a`Ybg`g]W`Yfh"

8YhU]`g

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