

< Y]XYV`ØhYbZYgh'&\$&(. 'BY`Y`F Òfi d`k]fX
bYi Y`< Y]XY_Òb][]b`]b`5a Y`]b[\Ui gYb

5a Y`]b[\Ui gYb` \Uh'gY]bY`bYi Y`< Y]XY_Òb][]b`BY`Y`F Òfi d
hf]hh'bUW`XYa`< Y]XYV`ØhYbZYgh']b`X]Y`i » ghUdZYb`]\fYf
Jcf[Àb[Yf]b"9fZU`fYb`G]Y`a Y`f`ØVYf`XUg`hfUX]h]cbY`Y`
9fY][b]g"

⇒ a`a U`Yf]gW`Yb`5a Y`]b[\Ui gYbž`Y]bYa`_`Y]bYb`Cfh]a`@UbX`fY]g
@ØbYVi f[ž`ZUbX`Ua`GcbbhU[`Y]bY`hfUX]h]cbgfY]W`Y`J`YfUbgH`hi b[
ghUhhž`X]Y`gck c`\`9]b`Y]a`]gW`Y`U`g`Ui W`6Ygi W`Yf`]b`]\fYb`6Ubb
n]Y`h`XUg`< Y]XYV`ØhYbZYgh`BUW`bYi b`HU[Yb`a`]h`Y]Yf`W`_Y]hYb
k`i`fXY`X]Y`bYi Y`< Y]XY_Òb][]b`[Y`f`Øbhž`i`bX`X]Y`&(!`À`f][Y`BY`Y`
F Òfi d`k]fX`bi b`X]Y`F`Ydf`ÀgYb`hUbh]b`XYf`VY`YVhYb`@ØbYVi f[Yf
< Y]XY`gY]b"

BY`Y`F Òfi d`ØVYfb]a`a`h`XUg`5a`hj`cb`XYf`V]g`Yf][Yb`?`Òb][]bž`@]gU
F Òhh[Yfž`X]Y`k`À`fYbX`]\fYf`5a`hgnY]h`VYY]bXfi`W`_YbXY`-`\$`HYfa`]bY
UVgc`j`]YfhY`"8]YgY`NU`U`\`gd]f]W`h`ZØf`XYb`i`a`ZUb[`i`bX`XYb
GhY`Y`bk`Yfh`XYg`5a`hYgž`XUg`a`]h]j`Y`J`YfUbhk`cfhi`b[`i`bX
9b[U[Ya`Ybhj`YfVi`bXYb`]gh`@]gU`F Òhh[Yfž`X]Y`ni`j`cf`]a
< chY`k`YgYb`hÀh][`k`Ufž`\]bhYf`Àggh[`fc»Y`i » ghUdZYbž`XU`XUg`5a`h
XYf`< Y]XY_Òb][]b`b]W`h`bi`f`a`]h`Y]bYa`?`f`ØbW`Ybž`gcbXYfb`Ui`W`
a`]h`VYXYi`hYbXYb`5i`Z[UVYb`k`]Y`XYf`J`YfhYhi`b[`XYf`FY[]cb
j`YfVi`bXYb`]gh"

9]bY`U`b[Y`HfUX]h]cb`XYf`< Y]XY_Òb][]b`bYb

8]Y`K`U`\`XYf`< Y]XY_Òb][]b`]gh`]b`5a Y`]b[\Ui gYb`Y]bY`gY]h`%-`(-
VYghY`YbXY`HfUX]h]cb`BY`Y`F Òfi d`]gh`X]Y`+("`?`Òb][]bž`X]Y`]b`X]YgY
: `i » ghUdZYb`hf]hh`b`]\fYf`i`b`_h]cb`fYdf`ÀgYbh]Yfh`g]Y`b]W`h`bi`f`X]Y
GUa`h[Ya`Y]bXY`5a Y`]b[\Ui gYbž`gcbXYfb`Ui`W`XYb`@UbX`fY]g

i bX`X]Y`[YgUa hY`F Y[]cb`@bYVi f[Yf`<Y]XY""8]YgY`F c`Y
VY]b\U`hYh`XUg`HY]`bY\`a Yb`Ub`nU`\`fY]WXYb`J YfUbgH`U`hi b[Ybž`XUg
?YbbYb`YfbYb`j cb`A YbgWXYb`Ui g`XYf`F Y[]cb`gck]Y`XUg
J c fghY`Yb`XYf`_i`hi fY`Yb`6YgcbXYf\Y]hYb`XYf`<Y]XY"

8]Y`<Y]XYV`ØhY`n]Y\`h`b]W`h`bi`f`X]Y`5i`Za`Yf_gUa`_Y]h`XYf
9]b\`Y]a`]gWXYb`Ui`Z`g]W`ž`gcbXYfb`Ui`W`X]Y`j`]Y`Yf`Hci`f]ghYbž`X]Y
XUg`k`i`bXYfgW`ØbY`i`U`6`ØhYba`Yf`VYk`i`bXYfb`a`ØW`hYb`" `b`XYf
j`Yf[Ub[YbYb`K`cWXY`Vch`XUg`<Y]XYV`ØhYbZYgh`Y]b
UVk`YW`g`i`b[gfY]WXYg`Dfc[fUa`a`a`]h`ØVYf`&\$`j`YfgW]YXYbYb
J YfUbgH`U`hi b[Ybž`X]Y`Y]bYb`9]bV`]W`_]b`X]Y`fY[]cbU`Y`?i`hi`f`i`bX
HfUX]h]cbYb`[Y[YVYb`\UVYb"

8]Y`Ub[YbY\`a`Yž`ZYgh]WXY`5ha`cgd`ÅfY`k`i`fXY`Xi`fW`Y]bY`J]Y`nU\`
j`cb`5`_hj`]h`hYbž`XUfi`bhYf`@j`Ya`i`g`_ž`HUbni`bX
H\YUhYfj`cfZØ`fi`b[Ybž`VYfY]WXYfh`"Gc`WXY`Y`Y]Yf`]W`_Y]hYb`gd]Y`Yb
Y]bY`nYbhfU`Y`F`c`Y`]b`XYf`Y`Ya`Y]bgW`UZh`i`bX`hfU[Yb`ni`f
9f\`U`hi`b[`XYf`HfUX]h]cbYb`VY]"8]Y`J`YfUbgH`U`hi`b[Yb`ZUbXYb`]\`fYb
<Ø`Ydi`b`_`h`a`]h`XYf`?`fØbi`b[`XYf`bYi`Yb`?`Øb][]bž`X]Y`gck`c`\`Y]bYb
ZY]Yf`]WXYb`F`U\`a`Yb`U`g`Ui`W`j`]Y`6Y[Y]ghYfi`b[]`YfVfY]hYhY"

9]b`k`Y]hYfYg`<Y]XYV`ØhYbZYgh`ghY`h`VYfY]hg`]b`Y]bYf`K`cWXY`]b
GW`bYj`YfX]b[Yb`Ui`Z`XYa`Dfc[fUa`a`"8cfh`k`YfXYb`X]Y`6Ygi`WXYf
YVYbZU`g`Y]b`gdUbbYbXYg`F`U\`a`Ybdfc[fUa`a`Yf`YVYb`XØfZb`
C`dYb!5]f!J`YfUbgH`U`hi`b[Ybž`Y]bY`@UgYfg\`ck`i`bX`Y]b`Y`g`hi`a`ni`[ž
XYf`a`]h`HUbni`bX`H\YUhYfXUfV]Yhi`b[Yb`[YZØ`h`gY]b`k`]fXž
j`YfgdfYWXYb`Y]b`k`Y]hYfYg`<][\`][\`h`ZØf`X]Y`@]YV\UVYf`XYf
hfUX]h]cbY`Yb`Y`g`hY`]b`XYf`@bYVi`f[Yf`<Y]XY""5i`W`]b
GW`bYj`YfX]b[Yb`k`]fX`Y]bY`bYi`Y`?`Øb][]b`[Y`_fØb`hž`k`Ug`ZØf`X]Y
F`Y[]cb`Y]b`VYXYi`hYbXYg`9fY][]b]g`XUfghY`h"

8]Y`i`U`6`ØhYb`XYf`<Y]XY`\UVYb`]b`X]YgYa`i`J\`f`j`Uf]UVY`[YV`Ø\`hž
k`Ug`XUg`Y`gh`ni`Y]bYa`VYgcbXYfYb`9f`YVb]g`a`UW`h`" `b`XYb
`Y`h`hYb`HU[Yb`k`i`fXY`Ui`W`X`Yf`K`Y`h`Y`fVYf]W`h`ni`a
;`Ygd`f`ÅW`gh`Y`a`Už`XYbb`Yg`k`i`fXY`j`cfUi`g[YgU[hž`XUgg`XYf
:`Y`gh`i`a`ni`[`i`bX`X]Y`?`fØbi`b[`Xi`fW`Ui`g`a`]h`F`Y[YbgW]fa`Yb
VYgi`W`h`k`YfXYb`gc`hYbž`k`Ug`XYa`Z`Ygh]WXYb`7`UfU`hYf`Y`XcW
_Y]bYb`5VVfi`W`hi`h"

8]Y ' < Y]XY _ Òb][]b ' U `g `Gma Vc ` `XYf `F Y []cb

8]Y `F c ``Y `XYf `< Y]XY _ Òb][]b `]gh`a Y `f `U `g `bi `f `Y]bYb `H]hY `ni `hfU [Yb "
G]Y `k]fX `ni `Y]bYa `Gma Vc ` `Z0f `X]Y `fY []cbU `Y `X Ybh]hÀhi bX `?i `hi f "
K À `fYbX `] `fYf `5a hgnY]h`fYdf`AgYbh]Yfh]g]Y `X]Y `K YfhY `i bX
HfUX]h]cbYb `XYf `@0bYVi f [Yf `< Y]XY `i bX `Vf]b [h`X]Y `GW Òb `Y]h`XYf
BUhi f `i bX `X]Y `9]bn][Ufh][_Y]h`XYf `F Y []cb `XYb `A YbgWYb `bÀ `Yf "
BY `Y `F Òfi d ` `Uh`bi b `X]Y `A Ò [`]W ` _Y]h`X`i fW `] `fY `DYfgÒb `]W ` _Y]h
i bX `9b [U [Ya Ybh`XYb `6Ygi W `Yf]bbYb `i bX `6Ygi W `Yfb `X]Y
6YgcbXYf `Y]hYb `XYf `< Y]XY `bÀ `Yfni Vf]b [Yb "

: 0f `U `Y `@]YV `UVYf `XYf `hfUX]h]cbY `Yb : YghY `]gh`Yg `Y]bY `gdUbbYbXY
NY]h" 8]Y `bÀW `ghY `? fÒbi b []b `GW `bYj YfX]b [Yb `i bX `X]Y
j YfgW]YXYbYb `J YfUbg]hU `hi b [Yb `V]YhYb `b]W `h`bi f `I bhYf `U `hi b [ž
gcbXYfb `Ui W `X]Y ; Y `Y [Yb `Y]h`X]Y `ÀbX `]W `Y `?i `hi f
BcfXXYi hgW `UbXg ` `Ui hbU ` `ni `Yf `YVYb " 8]Y `b`hYbh]cb `X]YgYf : YghY
]gh`Ygž`XUg `6Yk i gghgY]b `Z0f `X]Y `fY []cbU `Y `HfUX]h]cb `XYf `< Y]XY `ni
gW `ÀfZYb `i bX `X]Y `GW Òb `Y]h`X]YgYf `@UbXgW `UZh`ni `nY `YVf]YfYb " 9g
V `Y]Vh`UVni k UfhYbž`k Y `W `Y `VYgcbXYfYb `9f `YVb]ggY `X]Y `bYi Y
? Òb][]b `i bX `X]Y `UbghY `YbXYb : YghY `bcW `UbV]YhYb `k YfXYb "

8]Y `K U ` `XYf `< Y]XY _ Òb][]b `]gh`Y]b `VYXYi hYbXYf `6fUi W `]b `XYf
@0bYVi f [Yf `< Y]XYž`XYf `b]W `h`bi f `X]Y `fY []cbU `Yb `HfUX]h]cbYb
k]XYfgd]Y [Y `h`gcbXYfb `Ui W `X]Y `J YfVi bXYb `Y]h`XYf
; Ya Y]bgW `UZh`i]b `XYf `F Y []cb `nY][h " 8]YgY `HfUX]h]cb ` `Uh`Y]bY `Ub [Y
; YgW]W `hYž`X]Y `V]g]b `X]Y `BUW ` _Y]Y [gnY]h`ni f0W ` _Y]W `h`i bX `gd]Y `h
Y]bY `nYbhfU `Y `F c ``Y]b `XYf `?i `hi f `XYf `I a [YVi b ["

8]Y `YfghY `K U ` `ZUbX `% - (- `ghU`h`ž`i bX `gY]hXYa ` [UV `Yg `? cbh]bi]hÀh
]b `XYf `5i gk U ` `XYf `< Y]XY _ Òb][]bYbž`X]Y `U `g `6chgW `UZhYf]bbYb
XYf `F Y []cb `Zi b []YfYb " 8]YgY : fUi Yb `bY `a Yb `b]W `h`bi f `Ub
j YfgW]YXYbYb : YghYb `i bX `J YfUbg]hU `hi b [Yb `hY]ž`gcbXYfb `g]bX
Ui W `U `h]j `]b `gcn]U `Yb `i bX ` [Ya Y]bb0hn][Yb `Dfc `Y `hYbž`k Ug `X]Y
6YXYi hi b [`X]YgYf `F c ``Y `bcW `j Yfgh`Àf `h "

8]Y `F c ``Y `XYf `< Y]XY _ Òb][]b `i bX `] `fY
6YXYi hi b [

8]Y'<Y]XY_Öb][]b'\Uh'X]Y'k]W\h][Y'5i Z[UVYž'X]Y'GW Öb\Y]hi bX
?i`hi f'XYf'@ÖbYVi f[Yf'<Y]XY'ni`fYdfÄgYbh]YfYb"8]Yg'i a ZUggh'X]Y
HY]'bU\`a Y'Ub`fY[]cbU`Yb` : YghYbž'X]Y'K U\fbY\`a i b[]j cb
cZ]n]Y`Yb`HYfa]bYb`gck]Y'X]Y'K YfVi b[]ZÖf'X]Y'@ÖbYVi f[Yf'<Y]XY
U`g`Y]b`VY`]YVhYg`F`Y]gYn]Y`"@Ui`h'XYa`]c`fg]hnYbXYb`XYg`J`YfY]bg
<Y]XYV`ØhYbZYgh'5a Y`]b[\Ui`gYb`]gh'X]Y'DfÄgYbn`XYf'?Öb][]b`VY]
J`YfUbghU`hi b[]Yb`gck]Y`]\fY`2 ZYbh]W\`_Y]hgUfVY]h'a U» [YV`]W\`ZÖf
XUg`5bgY\`Yb`XYf`F`Y[]cb"

⇒a`]\f`&\$&'`fYdfÄgYbh]YfhY`X]Y`gW`Y]XYbXY'<Y]XY_Öb][]b`@]gU
F`Öh[Yf`X]Y`@ÖbYVi f[Yf'<Y]XY`VY]- \$`cZ]n]Y`Yb`HYfa]bYb"8]YgY
NU\`nY][]hž'XUgg'X]Y`5i Z[UVYb`XYf'<Y]XY_Öb][]b`b]W\`h`bi`f`Y]bY
gma`Vc`]gW`Yž`gcbXYfb`Ui`W\`Y]bY`U`_hj`Y`F`c`Y`]b`XYf
; Ya`Y]bgW`UZh`\UVYb"

: Ygh]j U`g`i bX`fY[]cbU`Y`6fÄi W`Y`

8 Ug'<Y]XYV`ØhYbZYgh']gh'Y]b`VYXYi`hYbXYg`9fY][]b]g`]a`?U`YbXYf
XYf'@ÖbYVi f[Yf'<Y]XY`i`bX`n]Y\`h`YXYg`]\f`HUi`gYbXY`j`cb
6Ygi`W`Yfb`Ub"BYVYb`XYf'?fÖbi`b[]XYf'<Y]XY_Öb][]b`V]YhYh`XUg
: Ygh]j U`Y]bY`J]Y`nU\`j`cb`5hfU`_h]cbYbž`XUfi`bhYf`hfUX]h]cbY`Yg
<UbXk`Yf`ž`c`_U`Y`; Ughfcbca]Y`gck]Y`A`i`g]_!`i`bX
HUbnUi`ZÖ\fi`b[]Yb"9]b`<][]\`][]h'g]bX`X]Y`i`a`nØ[]Yž'X]Y`c`Zh]`cb
HfUW`hYbj`YfY]bYb`i`bX`A`i`g]__UdY`Yb`VY[]Y]hYh`k`YfXYb"

⇒b`GW`bYj`YfX]b[]Ybž`k`c`XUg`b`ÄW`ghY'<Y]XYV`ØhYbZYgh'ghUhz]bXYhž
k]fX`XUg` : Ygh]j U`Y]bY`Ä\`b`]W`Y`J]Y`ZU`h`Ub`J`YfUbghU`hi`b[]Yb
V]YhYb"8]Y`GhUXh`\Uh`Y]b`fY]W\`U`h][]Yg`Dfc[]fUa`a`]Yd`Ubhž`XUg
<Ö\Ydi`b`_hY`k]Y`C`dYb!5]f!`?`cbnYfhY`i`bX`Y]bY`@UgYfg\`ck`i`a`ZUggh"
Gc`W`Y` : YghY`ghÄf`_Yb`X]Y` ; Ya`Y]bgW`UZh`i`bX`ZÖfXYfb`XYb
5i`ghUi`gW`nk]gW`Yb`XYb`6Yk`c\`bYfb`i`bX`XYb`6Ygi`W`Yfb`XYf
F`Y[]cb"

8 Ug'<Y]XYV`ØhYbZYgh']gh'gca]h`b]W\`h`bi`f`Y]b` : Y]Yfb`XYf`BUhi`f`i`bX
XYf`fY[]cbU`Yb`?i`hi`fž`gcbXYfb`Ui`W\`Y]bY`D`UhZc`fa`ZÖf`c`_U`Y
K]fhgW`UZh]gU`_hYi`fYž`i`a`]\fY`DfcXi`_hY`i`bX`8]Ybgh`Y]ghi`b[]Yb`ni
dfÄgYbh]YfYb"8]Yg`hfÄ[]h`ni`f`GhÄf`_i`b[]XYf`fY[]cbU`Yb`⇒Yb]h]hÄh
i`bX`ni`f` : ÖfXYfi`b[]XYg`Hci`f]ga`i`g]b`XYf`@ÖbYVi f[Yf'<Y]XY`VY]"

8YhU]g

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