

@Yj ]/ , \$' - /g'ja ' ? fYi nZYi Yf.  
A YbgWYb fYWX hgj Yf`Yhni b[ Yb `]b  
hØf\_]gWY Yf': UVf]\_ `Ui Z[ YXYW\_h

/ ei ch/@Yj ]/ , \$' - /g'ghY\h'i]b`XYf'?f]h]\_`k Y[ Yb  
A YbgWYb fYWX hgj Yf`Yhni b[ Yb `VY]'gY]bYa `hØf\_]gWY Yb  
@]YZYfUbhYb"² nU\_"`Fi bX' ( \$\$'6YgWYÅZh][ hY`k i fXYb  
Ybh`UggYbž`k Y]'g]Y [ Y[ Yb `5fVY]hg fYWX hgj YfghØ» Y  
dfchYgh]YfhYb"8]Y`? Ua dU[ bY`ZØf`GUi VYfY`?`Y]Xi b[ `ZcfXYfh  
j cb`@Yj ]/ , \$' - /g`X]Y`9]b\U`hi b[ `j cb`5fVY]hg fYWX hYb`i bX  
X]Y`K ]XYfY]bghY`i b[ `XYf`9bh`UggYbYb"9fZU\ fYb`G]Y`a Y\ f  
ØVYf`X]Y`U`hi Y`Yb`9bhk ]W\_`i b[ Yb`i bX`X]Y': cfXYfi b[ Yb`j cb  
5\_h]j ]ghYb`i bX'; Yk Yf\_gWY UZhYb"/ ei ch/



5 fVY]hg fYWX hgj Yf`Yhni b[ Yb `VY]'@Yj ] g. `9]b  
5i ZgWY fY]'ZØf`[ YfYWX hY`6YX]b[ i b[ Yb

⇒ XYb`YhnhYb`A cbUhYb`]gh`X]Y`5fVY]hgk Y]gY`XYg`HYI h]!F ]YgYb  
@Yj ]`GhfUi gg`]b`X]Y`? f]h]\_`[ YfUhYbž`VYgcbXYfg`]a`<]bV`]W\_`Ui ZX]Y  
5fVY]hgVYX]b[ i b[ Yb`]b`gY]bYb`hØf\_]gWY Yb': UVf]\_Yb"8]Y`² nU\_!

: UVf]\_ ]b`XYf`FY[ ]cb`GUb`ji fZUž`X]Y`YI`\_i`g]j`ZØf`@Yj`]g`dfcXi`n]Yfhž  
k`i`fXY`]bg`F`Ua`dYb`]W`h`[`YfØW`\_hž`b`UW`XYa`fi`b`X`(`\$\$`6`YgW`À`Zh][`hY  
Zf]gh`c`g`Y`bh`Ugg`Y`b`k`i`fXY`b`"8]Yg`Yf`G`W`f]hh`k`i`fXY`j`cb`XYf`  
?`Ua`d`U[`b`Y`ZØf`G`U`i`V`Y`f`Y`?`Y`X`i`b`[`f`f`7`7`7`7`i`b`X`XYf`;`Y`k`Y`f`\_`g`W`U`Z`h  
6`≠`H`9`?!`G`9`B`U`g`Y`]b`\_`U`f`Y`g`N`Y`]W`Y`b`j`cb`F`Y`d`f`Y`g`g]cb`[`Y`[`Y`b`Y`b`Y  
5`f`V`Y`]h`Y`f`.]bb`Y`b`[`Y`k`Y`f`h`Y`hž`X]Y`ZØf`]f`Y`F`Y`W`h`Y`Y`]b`h`f`Y`h`Y`b`"

8]Y`9`f`Y`][`b]gg`Y`b`U`a`Y`b`]\`f`Y`b`@`U`i`Z`]a`B`c`j`Y`a`V`Y`f`&`\$`&`ž`U`g  
n`U`a`f`Y`]W`Y`A`]h`U`f`V`Y`]h`Y`f`X`Y`f`2`n`U`!`:`UV`f`\_`V`Y`f`Y`]h`g`n`i`j`c`f`[`Y`[`Y`b  
5`f`V`Y`]h`g`f`Y`W`h`g`j`Y`f`g`h`Ø»`Y`i`b`X`X]Y`J`Y`f`k`Y`[`Y`f`i`b`[`]f`Y`g`F`Y`W`h`g`U`i`Z  
;`Y`k`Y`f`\_`g`W`U`Z`h`g`V`Y`]h`f]hh`d`f`c`h`Y`g`h]Y`f`h`Y`b`"8`Y`f`5`b`U`g`g`X`Y`g`G`h`f`Y`\_`g`k`U`f  
X]Y`?`Ø`b`X`][`i`b`[`X`Y`g`;`Y`k`Y`f`\_`g`W`U`Z`h`g`a`]h`[`]Y`X`g`G`Y`Y`f`;`Ø`Y`ž`k`U`g`X]Y  
9`a`d`Ø`f`i`b`[`i`b`h`Y`f`X`Y`b`?`c`Y`[`.]bb`Y`b`Y`f`j`c`f`f]Y`Z`8]Y`F`Y`U`\_`h]cb`XYf`  
G]W`Y`f`Y`Y`]h`g`\_`f`À`Z`h`Y`k`U`f`V`f`i`h`U`ž`U`g`g]Y`Z`f]Y`X`]W`Y`8`Y`a`c`b`g`h`f`U`h]cb`Y`b  
a`]h`H`f`À`b`Y`b`[`U`g`i`b`X`D`Z`Y`Z`Y`f`g`d`f`U`m`b]Y`X`Y`f`g`W`i`[`Y`b`"8]Y`g`Y  
9]b`g`W`Ø`W`h`Y`f`i`b`[`g`j`Y`f`g`i`W`Y`ZØ`f`h`Y`b`n`i`f`Z`f]gh`c`g`Y`b`9`b`h`U`g`g`i`b`[`j`cb  
(`\$\$`5`f`V`Y`]h`Y`f`.]bb`Y`b`ž`k`U`g`i`a`g`c`X`f`U`a`U`h]g`W`Y`f`Y`f`g`W`Y`]b`hž`X`U`X`Y`f  
[`U`b`n`Y`J`c`f`Z`U`]]b`Y`]b`Y`a`?`c`b`h`Y`i`h`i`g`h`U`h`Z]b`X`Y`hž`]b`X`Y`a`@`Y`j`]g`U`i`h  
Y`[`Y`b`Y`b`5`i`g`g`U`[`Y`b`X]Y`A`Y`b`g`W`Y`b`f`Y`W`h`Y`i`b`h`Y`f`g`h`Ø`h`n`Y`b`g`c`Y`h`"

8]Y`:`c`f`X`Y`f`i`b`[`U`b`@`Y`j`]G`h`f`U`i`g`g`ž`X]Y`9]b`U`h`i`b`[`j`cb  
5`f`V`Y`]h`g`f`Y`W`h`Y`b`i`b`X`X]Y`K`]Y`X`Y`f`Y`f`g`h`Y`i`b`[`X`Y`f`Y`b`h`U`g`g`Y`b`Y`b  
5`f`V`Y`]h`Y`f`.]bb`Y`b`g]W`Y`f`n`i`g`h`Y`Y`b`ž`k`i`f`X`Y`j`cb`j`Y`f`g`W`]Y`X`Y`b`Y`b  
C`f`[`U`b]g`U`h]cb`Y`b`ž`X`U`f`i`b`h`Y`f`X`Y`a`K`c`f`\_`Y`f`F`][`h`g`7`c`b`g`c`f`h]i`a`ž  
`U`i`h`g`h`U`f`\_`Y`f`c`V`Y`b`"8]Y`j`cb`XYf`7`7`7`i`b`X`6`≠`H`9`?!`G`9`B  
j`c`f`[`Y`V`f`U`W`h`Y`b`?`U`[`Y`b`n`Y`[`Y`b`ž`X`U`g`g`b]W`h`i`b`i`f`X]Y`F`Y`W`h`Y`X`Y`f  
5`f`V`Y`]h`Y`f`.]bb`Y`b`j`Y`f`Y`h`h`k`i`f`X`Y`b`ž`g`c`b`X`Y`f`b`U`i`W`X]Y`D`f]b`n]d]Y`b`ž`U`i`Z  
X]Y`g]W`@`Y`j`]g`g`Y`V`g`h`j`Y`f`d`Z]W`h`Y`h`U`h`"8]Y`5`f`V`Y`]h`g`V`Y`X]b`[`i`b`[`Y`b`]b  
X`Y`f`H`Ø`f`\_`Y`ž`k`c`j`]Y`Y`B`À`Y`f`.]bb`Y`b`a`]h`Y`]b`Y`a`A`c`b`U`h`g`Y`]b`\_`c`a`a`Y`b  
j`cb`Y`h`k`U`\*`\$`9`i`f`c`X`U`g`g`h`U`U`h]W`Y`A`]b]a`i`a`j`Y`f`X]Y`b`Y`b`ž`g]b`X  
V`Y`f`Y`]h`g`d`f`Y`\_`f`"8]Y`Ø`b`[`g`h`Y`b`9`b`h`k`]W`i`b`[`Y`b`k`Y`f`Z`Y`b`Y`]b`@]W`h`U`i`Z  
X]Y`B`c`h`k`Y`b`X`][`\_`Y`]h`j`cb`J`Y`f`À`b`X`Y`f`i`b`[`Y`b`"

8`Y`f`D`f`À`g]X`Y`b`h`j`cb`6`≠`H`9`?!`G`9`B`ž`A`Y`a`Y`h`H`Ø`f`\_`a`Y`b`ž`V`Y`h`c`b`h`Y`ž`X`U`g`g  
@`Y`j`]g`ž`U`g`[`c`V`U`Y`f`A`U`f`\_`h`ZØ`f`Y`f`]b`X`Y`f`X`U`b`g!`X`i`g`h`f]Y`ž`Y`]b`Y  
J`Y`f`U`b`h`k`c`f`h`i`b`[`h`U`h`8]Y`5`f`V`Y`]h`Y`f`.]bb`Y`b`Y`f`k`U`f`h`Y`b`j`cb`@`Y`j`]g`ž  
X`U`g`g`Y`g`g`Y`]b`Y`b`9]b`Z`i`g`g`b`i`h`h`ž`i`a`g]W`Y`f`n`i`g`h`Y`Y`b`ž`X`U`g`g`]f`Y  
F`Y`W`h`Y`f`Y`g`d`Y`\_`h]Y`f`h`k`Y`f`X`Y`b`"8`U`g`J`Y`f`g`À`i`a`b]g`X`Y`g`

I bhYfbY\ a YbgžUi ZX]Y J cfk ØfZY'ni fYU[ ]YfYbž\_ÖbbhY  
k Y]hfY]WXYbXY: c[ Yb\UVYb"8]Y'777'ZcfXYfh'b]W'h'bi f'X]Y  
K ]YXYfY]bghY'i b[ 'XYf'[ Y\_ØbX][ hYb'6YgWÅZh][ hYbž'gcbXYfb'Ui W  
X]Y'5bYf\_Ybbi b[ 'XYf'; Yk Yf\_gWUZh'6≠H9?!G9B'U'g`Y[ ]h]a Yb  
J Yf\UbX'i b[ gdUfhbYf'ZØf'k Yf\_hÅ[ `]WXY'6Y`Ub[ Y"

9]b'nYbhfU`Yf`Di b\_h]b`X]YgYa `?cbZ[\_h]gh`X]Y'6YXYi hi b[ 'XYf  
; Yk Yf\_gWUZh'gZfY]\Y]h"8]YgY`]gh`U`g`Y]bY`XYf'[ fi bX`Y[ YbXYb  
5fVY]hgbcfa Yb`XYf`hYfbUh]cbU`Yb'5fVY]hgcf[ Ub]gUh]cb`f@CŁ  
UbYf\_Ubbh"8]Y`HUhgUWYž`XUgg`@Yj ] g`U`g`<Ui dhUi ZhfU[ [ YVYf`XYf  
² nU\_!; UVf[\_X]Y`I a ghÅbXY`b]W'h]j YfVYggYfh`\Uhž`XYi hYh`Ui ZY]bY  
A ]ggUW`hi b[ `X]YgYf`Df]bn]d]Yb`\]b"9a dØfi b[ `ØVYf`X]YgY  
J Yf`Yhni b[ Yb`\Uh'b]W'h'bi f`]bbYf\U`V`XYf`HØf`Y]ž'gcbXYfb'Ui W  
]bhYfbUh]cbU`ZØf'5i ZgY\Yb`[ Ygcf[ h"

8 UfØVYf`\]bUi g`k i fXYb`Ui W`UbXYfY`A Uf\_Yb`k ]Y`<i [ c`6cgg`i bX  
NUfU`Ui Z`\fY`J YfUbhk cfhi b[ `ZØf`X]Y`A ]ggghÅbXY`VY]² nU\_`; `cVU`  
\]b[ Yk ]YgYb"8]YgY: ]fa Yb`g]bX`YVYbgc`[ YZcfXYfhž  
g]WYfni ghY`Ybž`XUgg`\fY`Ni `]YZfYf`X]Y`5fVY]hgYfW`hY`Y]b\U`hYb"  
8]Y` VYfk UW`i b[ `i bX`8i fW`gYhni b[ `j cb`ZU]fYb  
5fVY]hgVYX]b[ i b[ Yb`]gh`Y]b`GW`ØggY`h`Ya Už`XUg`g]W`Xi fW`X]Y  
[ YgUa hY`A cXY]bXi ghf]Y`n]Y`h"

8]Y`FYU\_h]cb`XYf`J YfVfUi W`YfgWUZh`\_ÖbbhY`Y]b`K YbXYdi b\_h  
gY]b"5b[ Yg]W`hg`XYf`U\_hi Y`Yb`J cfZÅ`Y`gc`hYb`?cbgi a Ybh.]bbYb  
j cb`@Yj ] g!DfcXi \_hYb`g]W`XUni `Ui Zfi ZYbž]\fYb`9]bZi gg[ Y`hYbX  
ni `a UW`Yb" XXYf`9]b\_Ui Z`\_Ubb`Y]bY`Gh]a a Y`ZØf`VYggYfY  
5fVY]hgVYX]b[ i b[ Yb`gY]b ž`gU[ h: i bXU`6U\_]gž`Y]bY`XYf  
VYhfcZYbYb`5fVY]hYf.]bbYb" K ]f`VfUi W`Yb`Yi fY`I bhYfghØhni b[ ž  
i a `X]Y'; Y\Øf`cg][ \_Y]h`XYf`A Uf\_Yb`ni `VfYW`Yb" 8]Y  
9bhk ]W`i b[ Yb`VY]`@Yj ] g]j YfXYi h`]W`Yb`X]Y`Xf]b[ YbXY  
Bchk YbX][ \_Y]h`ZØf`Y]bY`j YfUbhk cfhi b[ gj c`Y  
I bhYfbY\ a YbgZØ\fi b[ `i bX`YW`hY`DUfhbYfgWUZhYb`a ]h`XYb  
; Yk Yf\_gWUZhYbž`i a `g]WYfni ghY`Ybž`XUgg`X]Y`FYW`hY`U`Yf  
5fVY]hYf.]bbYb`fYgdY\_h]Yfh`k YfXYb"

8]Y'; YgW`Y\b]ggY`]b`GUb`ji fZU`g]bX`b]W`h'bi f`Y]b`c`U`Yg`DfcV`Ya ž  
gcbXYfb`gd]Y[ Y`b`Y]bY`VfY]hYfY`8]g\_i gg]cb`ØVYf`5fVY]hgYfW`hYž

I bhYfbY\ a Ybgj YfUbhk cfhi b[ 'i bX'X]Y'9h\ ]\_ 'XYf' [ `cVU`Yb  
A cXY]bXi ghf]Y'k ]XYf" `Gc`WXY'J cfZÄ`Y'gc`hYb'U`Y'A Uf\_Yb'XUni  
UbfY [ Ybž']\ fY'DfU\_h]\_Yb'ni 'ØVYfXYb\_Yb'i bX'g]W`ZØf'Y]bY  
[ YfYW hYfY'i bX'a YbgW`]WYfY'5fVY]hgi a [ YVi b[ 'Y]bni gYhnYb"

8YhU]`g

6Ygi WXYb'G]Y'i bg'Ui Z.'a Y]b!VYf`]b"bYh