

K ]fhgW\ UZhgz`ÀW\ Yb\_cbnYdh'6Yf`]b!A ]hhY.  
B Yi Y`DYfgdY\_h]j Yb`ZØf`; Yk YfVY

9bhXYW\_Yb`G]Y`XUg`bYi Y`K ]fhgW\ UZhgz`ÀW\ Yb\_cbnYdh`XYg  
6Yn]f\_g`A ]hhY`]b`6Yf`]b`°9fZU\ fYb`G]Yž`k ]Y`X]Y  
6Yn]f\_gVØf[ Yfa Y]ghYf]b`GhYZUb]Y`FYa`]b[ Yf`]bbcj Uh]j Y  
GhfUHY[ ]Yb`ni f`G]W\Yfi b[ `i bX`9bhk ]W\_`i b[ `[ Yk YfV`]W\Yf  
: `ÀW\ Yb`]b`Y]bYf`k UW\gYbXYb`GhUXh`Zcfa i`]Yfh`Uh`  
=bZcfa ]YfYb`G]Y`g]W\`ØVYf`X]Y`<YfUi gZcfXYfi b[ Yb`ZØf  
<UbXk Yf\_gi bhYfbY`a Yb`i bX`X]Y`?fYUh]j k ]fhgW\ UZhi bX`X]Y  
[ Yd`UbhYb`A U»bU`a Ybž`i a`X]Y`; Yk YfVYZ`ÀW\ Yb`bUW\`U`h][  
ni`ghYi Yfb`"@YgYb`G]Y`a Y`f`ØVYf`X]Y`[ Yd`UbhYb`GW`f]hhY`ni f  
cdh]a U`Yb`i: `ÀW\ Ybbi hni b[ `i bX`XYfYb`6YXYi hi b[ `ZØf`X]Y  
Ni`\_i bZi`6Yf`]bg"



9]bY`Ui ZFY[ YbXY`K YbXY`ZØf`X]Y`K ]fhgW\ UZhi]a` `<YfnYb`6Yf`]bg`  
8Yf`6Yn]f\_`A ]hhY`UhY]b`k Y[ k Y]gYbXYg  
K ]fhgW\ UZhgz`ÀW\ Yb\_cbnYdh]bg`@VYb`[ Yfi ZYbž`XUg`X]Y`K Y]W\Yb  
ZØf`X]Y`G]W\Yfi b[ `i bX`9bhk ]W\_`i b[ `j cb`; Yk YfVYZ`ÀW\ Yb`ghY`Yb  
gc`""6Yn]f\_gVØf[ Yfa Y]ghYf]b`GhYZUb]Y`FYa`]b[ Yf`ghUfhYh`XUa ]h

Y]bY`⊕]h]Uh]j Yž`X]Y`X]Y`XfÅb[ YbXYb`6YXØfZb]ggY`XYf`c\_U`Yb  
l bhYfbY\`a Yb`]b`XYb`i: c\_i g`fØW\_h"

⇒ `gd fi XY`bXYb`6Yf`]b`\_cb\_i ff]YfYb`j ]Y`Y`GY`hc fYb`i a`X]Y  
\_bUddYb`i: `ÀWYb`i`i bX`XYf`6Yn]f\_`A ]hhYž`U`g`Y]bYf`XYf`Ua  
X]W hYghYb`VYg]YXY`hYb`6YfY]WY`XYf`GhUXhž`g]Y\`h]g]W`XUVY]  
VYgcbXYfYb`<YfUi gZcfXYfi b[ Yb`[ Y[ YbØVYf`K c\`bi b[ gVUi ž  
⊕ZfUghfi \_hi fYb`i bX`b]W h`ni`Y`hnh`X]Y`nU\`fY]WYb`<UbXk Yf\_g!`i bX  
?fYUh]j i bhYfbY\`a Yb`[ YfUhYb`i bhYf`8 fi W\_`8 ]Y`DfcV`Ya Uh]\_3  
J YfXfÅb[ i b[ `i bX`ZY\`YbXY`9fk Y]hYfi b[ gZ`ÀWYb`gYhnYb`XYb  
`c\_U`Yb`6Yhf]YVYb`a `ÀW h][ `ni`°

K ]fhgW UZhgz`ÀW Yb`\_c b nY d h. `9]b`b Yi Yg  
? Ud ]hY`ZØf`6Yf`]b`A ]hhY

5a`%+`"C`\_hcVYf`&\$&(`Z]Y`XYf`Yb hgW Y]XYbXY`6YgW`i gg`]b`XYf`  
6Yn]f\_gj YfcfXbYhYbj YfgUa a`i b[ .`8 Ug`VYn]f\_]WY  
K ]fhgW UZhgz`ÀW Yb`\_c b nY d h]gh`bi b`cZZ]n]Y`U`g`gh`AXhYVUi`\_]WY  
D`Ubi b[ `UbYf`\_Ubbh`8 ]YgYg`?c b nY d h`XYZ]b]Yfh`b]W h`bi f`X]Y  
U`hi Y`Y`@U[ Y`XYf`; Yk YfVYZ`ÀW Yb`ž`gcbXYfb`[ ]Vh`Ui W`Y]bYb  
df`Ån]gYb`i: U\fd`Ub`ZØf`X]Y`ni`\_ØbZh][ Y`K ]fhgW UZhgzYb`hk ]W`i b[ `]a  
6Yn]f\_"

8]Y`9f\`YVi b[ `XYf`K ]fhgW UZhgz`ÀW Yb`k Uf`Y]b`YfghYfž  
Yb hgW Y]XYbXYf`GW f]hh`i`⊕g[ YgUa h`k i fXYb`\_bUdd`) +\$`<Y`hUf  
K ]fhgW UZhgz`ÀW Yb`]a`6Yn]f\_`A ]hhY`i bhYfgi W hž`k c j cb`fi bX`) &\$  
<Y`hUf`VYfY]hg`U`h]j`[ Ybi hnh`k YfXYb``8cW`X]Y`U`Ufa ]YfYbXY  
B UW f]W h`Bi f`Yhk U`(-`ž)`<Y`hUf`V]YhYb`bcW  
9bhk ]W`i b[ gdchYbn]U``8 ]YgY`i: `ÀW Yb`\_ØbbhYb`]b`XYf`Ni`\_i bZh`U`g  
k Yfhj c`Y`FYggci fW`b`ZØf`bYi Y`i bhYfbY\`a Yb`cXYf  
9l dUbg]cbga Ò[ `]W`\_Y]hYb`X]YbYb"

GhfUhY[ ]gW Y`5 i gf]W hi b[ `i bX`\_ØbZh][ Y  
9bhk ]W`i b[

8 Ug`YfghY`hY`?c b nY d h`Y[ h`UW h`@Y]h]b]Yb`ZYghž`X]Y`XYb`6Yn]f\_  
Ub`Y]hYb`k YfXYb``9g`g\_]nn]Yfh`ghfUhY[ ]gW Y`5 bg`ÀhnY`ZØf`gdYn]Y`Y

:`ÅWYb`i bX`6YfY]WXYž`k c`X]Y`5bg]YX`i b[ `VYgh]a a hYf`Bi hni b[ Yb VYgcbXYfg`[ YZ`fXYfh`k YfXYb`gc`""Gc`V`Y]Vh`\_Y]b`GhY]b`Ui Z`XYa UbXYfYbž`k Ybb`Yg`i a `X]Y`Ni \_i bZ`h`XYg`; Yk YfVYg`]b`A ]hY`[ Y`h` 8]Y`9f[ YVb]ggY`k i fXYb`]b`Y]bYa` i a ZUb[ fY]WXYb`6Yf]W h ni gUa a Yb[ YZUgghž`XYf`XYb`6Øf[ Yf]bbYb`i bX`6Øf[ Yfb`YVYbgc`k ]Y XYb`9bhgWXY]Xi b[ ghf`Å[ Yfb`Y]bYb`h]YZYb`9]bV`]W\_`]b`X]Y`D`Ubi b[ Yb Yfa`Ò[ `]W`h"

8]Y`HY]`bU`a Y`XYf`² ZZyb`h]W`\_Y]hi bX`j YfgW`]YXYbY ðhYfYggYb[ fi ddYb`k`Å`fYbX`XYg`[ YgUa hYb`DfcnYggYg`nY][ h`XUg hfUbgdUfYb`hY`J cf[ Y`Yb`XYg`6Yn]f`gUa hYg`"8]Y`Ni gUa a YbUfVY]h nk ]gWXYb`J Yfk U`hi b[ ž`Dc`]h]\_`i bX`K ]fhgW`UZ`h`gc`f[ h`ZØf`Y]b`ghUf`\_Yg : i bXUa Ybž`Ui Z`XYa `X]Y`ni \_i bZ`hgZ`Å`][ Y`9bhk ]W\_`i b[ `XYg 6Yn]f`\_Yg`Ui Z[ YVUi h`k YfXYb`\_Ubb"

9]b`i a ZUggYbXYg`D`Ubi b[ gXc`\_i a Ybž`XUg`Ui W`VYfY]hg YI ]gh]YfYbXY`? cbnYdhY`Yf[ `Åbnž`]gh`bi b`XUg`F`ØW\_[ fUh`ZØf`X]Y ; Yk YfVYZ`ÅWXYbYbhk ]W\_`i b[ `]a`6Yn]f`\_A ]hY`"8]Y`ð]h]Uh]j Ybž`X]Y XUfUi g`Yfj cf[ Y`Yb`ž`j YfgdYfWXYb`b]W`h`bi f`GhUV]`]h`Åž`gcbXYfb Ui W`K UW`ghi a`i bX`j ]hU`Yb`5i ghUi gW`ZØf`X]Y`k ]fhgW`UZ`h]W U\_h]j Y`ðbYbghUX`h`

: Øf`U`Y`ž`X]Y`h]YZYf`]b`X]Y`A UhYf]Y`Y]bhUi WXYb`a`ÒW`hYb`."8]Y XYhU]`]YfhYb`6Yf]W`hY`i bX`D`Ubi b[ Yb`ghY`Yb`ni f`J YfZØ[ i b[ `9]b bYi Yf`<c`Z`bi b[ ggW`]a a Yf`ZØf`X]Y`K ]fhgW`UZ`h]a`6Yn]f`\_A ]hY`°

8YhU]`g

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